BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

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PLAGUE.

i. LASNET. Aperçu sur la fréquence de la peste dans les colonies françaises au cours des dix dernières années. [**Plague in the French Colonies in the Last Ten Years.**]—*Ann. de Méd. et de Pharm. Colon.* 1929. Jan.–Feb.–Mar. Vol. 27. No. 1. pp. 5–19.

ii. CAZANOVE. La peste au Sénégal (1924–1927).—*Ibid.* pp. 20–33.

iii. CARTRON. Note sur l'épidémie de peste de l'année 1928 au Sénégal.—*Ibid.* pp. 33–43.

iv. LEFROU (G.). Rapport sur une mission d'étude de la peste au Cayor (Août 1928).—*Ibid.* pp. 43–64.

v. SOREL & ARMSTRONG. La lutte préventive contre la peste dans la circonscription de Dakar et dépendances durant l'année 1928.—*Ibid.* pp. 64–72.

vi. THIROUX. La peste à Madagascar (1923–1928).—*Ibid.* pp. 72–84.

vii. FONQUERNIE. Fonctionnement du service de la peste au Bureau Municipal d'Hygiène de Tananarive en 1927.—*Ibid.* pp. 85–94.

i. Inspector-General Lasnet gives a summary of the outbreaks of plague in Indo-China, Madagascar, Réunion and French West Africa during the last ten years. Tables are given of the cases occurring in the years under review. In Indo-China the most marked epidemic period is during April and May, the hot season, with diminution during the rainy season. In a similar way the rat fleas increase and diminish with the changing seasons. Vaccination of all persons in threatened centres is compulsory, other usual sanitary precautions are taken and the number of cases has steadily decreased (see table, p. 8). The plague conditions in the other colonies are reviewed year by year with mortality tables. Vaccination has been generally successful and the natives are showing confidence in preventive measures. The other papers are individual reports from medical officers on the spot and provide material for Dr. Lasnet's summary.

ii. Lt.-Col. Cazanove gives the records of plague in Senegal 1924–1927 and a list of the various rodents found in the colony. Lt.-Col. Cartron (iii) carries on the record to the end of 1928.

iv–vii. These are well-written and interesting reports, but do not contain any new facts about plague. A useful bibliography is given at the end of these papers.

J. H. Tull Walsh.

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LASNET. Aperçu sur la fréquence de la peste dans les colonies françaises au cours des dix dernières années. [**Plague in French Colonies for Last Ten Years.**]—*Bull. Office Internat. d'Hyg. Publique.* 1929. Apr. Vol. 21. No. 4. pp. 587–600. With 2 figs.

The author is Inspector-General of Health for the French Colonies and reports briefly on the occurrence of plague in Indo-China, Madagascar, Réunion and West Africa. The information is mainly statistical and has appeared in other journals. An interesting comparison of the attitude of the natives of W. Africa in regard to various vaccines is given. Oral vaccine, " pestedo " (Poulenc), is accepted, but there have been no satisfactory results. The aqueous vaccine (Pasteur Institute), which requires two injections, is not accepted, partly because it sometimes causes reaction. The oil vaccine of Dr. LE MOIGNIC [this *Bulletin*, Vol. 12, p. 361] causes no reaction and requires only one injection. The natives have confidence in this vaccine and accept it. Of the value of preventive vaccination there is no doubt.

J. H. T. W.

WU LIEN-TEH, POLLITZER (R.), CHIA-SWEE (Lin) & JETTMAR (H. M.). **Studies upon the Plague Situation in North China. With Appendices.**—*Nat. Med. Jl. China.* 1929. June. Vol. 15. No. 3. pp. 273–402. With 10 plates (1 map). [63 refs.] [Manchurian Plague Prevention Service, Harbin.]

It is not possible to condense these various studies. Much of the matter has in substance appeared in other journals [see also this *Bulletin*, Vol. 26, p. 518]. In a chapter of " General Conclusions," Dr. Wu Lien-Teh writes : A hopeful beginning has been made with the investigation of wild rodents and their parasites. Whatever may be their rôle in the spread of plague, we can definitely assert that the local rats suffer from plague and spread the disease. All rats examined were infested with *Xenopsylla cheopis*. Also human parasites (*P. irritans* and *C. lectularius**) appeared to share in the transmission of plague in the Tungliao outbreaks. In addition to the tarabagan-caused plague entering from Transbaikalia and Outer Mongolia, North China has to deal with endemic plague due to rats, etc.

J. H. T. W.

IIMURA (Yasuzo). [**An Outbreak of a Case of Plague in Osaka Harbour and Measures taken therefor.**]—*Jl. Public Health Assoc. Japan.* 1929. June. Vol. 5. No. 6. [In Japanese. English summary p. 13.]

The writer states that on May 8th, 1929, a man from the steamer " Sumatra Maru " died of plague in the Seamen's Hospital, Osaka. The steamer had arrived from Bombay with cotton. The ship was fumigated and of 68 rats 3 were found to be infected. A little later a case of plague occurred on the " Gensau Maru," which had been in the

* " Inoculation experiments with both *Pulex irritans* and bed-bugs (*Cimex lectularius*) removed from the clothes and blankets of fresh plague victims gave positive results," p. 340.

same dock as the "Sumatra Maru." An infected rat was also found on "Selyo Maru," which arrived at Osaka from Bombay on May 12th. Due precautions were taken on shore, and except for one infected rat among 1,900 examined, the virus has not spread any more.

J. H. T. W.

CAZANOVE (F.). L'épidémiologie de la peste au Sénégal. [**Epidemiology of Plague in Senegal.**]—*Rev. Prat. Malad. des Pays Chauds.* 1929. June. Year 8. Vol. 9. No. 6. pp. 266, 269–276, 279–282. With 2 maps in text.

This is more or less a compilation, but gives an interesting account of the existence of plague among human beings and rodents in Senegal. The author states that of all the French colonies in W. Africa, Senegal is the only one in which plague is always found; in a region limited to the maritime zone and the two sides of the Dakar-Saint Louis railway. The morbidity is not very high: 2·63 per 1,000 inhabitants in 1922 to 5·49 in 1927, the highest in seven years; mortality about 50 to 85 per cent. of cases. All the animals examined, except the hedgehog, are infested with *Xenopsylla cheopis* [see this *Bulletin*, Vol. 22, p. 373].

J. H. T. W.

SCHWETZ (J.). La peste au Congo. (Note préliminaire). [**Plague in the Congo.**]—*Bruxelles-Méd.* 1929. June 9. Vol. 9. No. 32. pp. 914–916.

The "Anti-Plague Mission for Lake Albert" was organized by the Laboratory of Stanleyville, of which the author is Director. He has lately returned from a visit of inspection lasting two months and reports briefly on the work of the mission and on the general situation. Plague exists in several small foci on the west of Lake Albert. Twenty cases were proved in natives, and some in rats. The situation is not serious, but it will take some time to deracinate a disease endemic in the country for many years. A small permanent mission will remain to watch events.

J. H. T. W.

THIROUX (A.). Les vaccinations contre la peste à Madagascar. Les résultats obtenus. [**Anti-Plague Vaccination Results in Madagascar.**]—*Bull. Soc. Path. Exot.* 1929. June 12. Vol. 22. No. 6. pp. 412–418. With 1 text fig. [2 refs.]

Plague is endemic in Madagascar with outbreaks following a regular seasonal curve. The lowest point of the curve is in July and from then onward the cases increase and the summit of the curve is reached in January and February, to decrease again to July. Up to July 1927 only a small number, under 15,000, of vaccine inoculations had been given yearly. Between July 1927 and April 1929 400,000 inoculations were carried out, with the result that there was a decrease of 265 cases as compared with the previous year. The circulation of natives in provinces contaminated by plague is controlled by sanitary passports.

J. H. T. W.

KALINA (Georg). Der endemische Pestherd im zentralen Tjan-Schan. [**Endemic Plague Focus in Tjan-Schan.**]—*Zent. f. Bakt.* I. Abt. Orig. 1929. Sept. 28. Vol. 114. No. 1/2. pp. 50–54. [Sanit.-Bact. Inst., U.S.S.R., Tashkent.]

Central Tjan-Schan consists mostly of mountains and high plateaux. The author describes the geography, topography and climate of the district. He describes certain appearances of plague and gives a note on pneumonic plague starting in Basch-Kaindy. A list of the various rodents found in this region is given :—

Hares (*Lepus lehmanni, L. stoliczkanus, L. timidus, L. tolai*) ; marmots (*Arctomys baibacina, Ar. caudatus, Ar. centralis*) ; ground squirrel (*Citellus relictus*) ; field mice (*Microtus eversmanni, M. tianshanicus, M. socialis, M. ilaeus, M. arvalis Alticola gracilis, A. villosa*) ; hamster (*Cricetulus sangarus*) ; a gerbille (*G. montanus*) ; and the rat-like hare, *Ochotona rutila.*

J. H. T. W.

ZEISS (H.). V. Die Pest in Russland. I. Pestähnliche Lymphdrüsenentzündungen im Wolgadelta 1926. (Tularämie ?). [**Plague in Russia. Plague-like Adenitis in the Volga Delta. ? Tularaemia.**] —*Muench. Med. Woch.* 1929. July 5. Vol. 76. No. 27. pp. 1137–1138. [6 refs.]

An account is given of epidemic prevalence of a disease with much similarity to plague, but with little mortality. Can it be tularaemia ? Mild cases remain ambulatory. Fever lasts from 3 days to 2 weeks and a painless swelling of glands appears in 10 to 12 days. The buboes seldom open and they disappear in from 2 to 7 weeks. The disease itself is over in from 3 weeks to 2½ months. Microscopic examination of blood and lymph gland pulp proved negative, but guineapigs inoculated with bubonic pus died in 7 to 11 days and subpassage could be effected from animal to animal. Tissues and organs contain the virus. Infective organs such as the spleen after 53 days in glycerine could still produce infection. In smears from the spleen small coccobacillus-like, Gram-negative structures, without a definitely sharp outline, were seen. No growth was obtainable on ordinary agar, but with the addition of serum there appeared 1 or 2 small transparent delicate colonies, which soon turned greyish-yellow in the centre. Coccus-like structures are more commonly shown by agar colonies, while bacillary forms are found in smears of organs. Agglutination to 1 in 800 was obtained with serum of inoculated animals that had recovered. In the course of investigation 3 persons became infected and 2 of these developed buboes. No definite idea of the mode of infection of human beings has yet been elaborated, but it is noteworthy that the epidemics have occurred with the flooding of rivers in spring, and that this rise in the rivers, especially when excessive, compels numerous water rats (*Arvicola amphibius*, L.) to take to the land and enter houses. The differential diagnosis lies between plague, climatic bubo, sodoku and tularaemia. Clinically the condition resembles tularaemia. It still remains to compare the Russian and American strains of *Bact. tularense.*

W. F. Harvey.

ZEISS (H.). VI. Die Pest in Russland. II. Die pestähnlichen Seuchen an der Oka und dem Ural im Jahre 1928. Tularämie? [**VI. Plague in Russia. Plague-like Epidemics on the Oka and the Ural in 1928. ? Tularaemia.**]—*Muench. Med. Woch.* 1929. Aug. 9. Vol. 76. No. 32. pp. 1342–1344. With 1 text fig. [1 ref.]

The occurrence of a disease with similarity to plague has been discussed by the author as regards its occurrence in the Volga delta (see above) and its relation to tularaemia. Out of more than 800 reported cases on the Oka only 3 died. The disease had two well-marked forms, the glandular and the pulmonary. The pulmonary manifested itself as a severe diffuse alveolar bronchitis. Laboratory experimentation would seem to justify the conclusion that this is a plague-like disease, transmitted to man from water rats, and closely resembling the North American tularaemia.

W. F. Harvey.

SARCHI (G.). Die Pest in Russland. Zu obigem Artikel von Prof. Dr. H. Zeiss in Nr. 27 u. 32, 1929 dieser Wschr. [**Plague or Tularaemia in Russia.**]—*Muench. Med. Woch.* 1929. Aug. 16. Vol. 76. No. 33. p. 1382. [San. Bact. Inst., Swerdowsk, S.S.S.R.]

This is a note to intimate that an organism isolated during a plague-like epidemic in the Obdorsk district of Russia has been proved identical with the American *Bact. tularense.* The disease therefore was undoubtedly tularaemia.

W. F. Harvey.

GAISKY (N. A.). [Sur la question de la peste spontanée chez les spermophiles.] [**Plague among Spermophiles.**]—*Rev. Microbiol., Epidémiol. et Parasit.* 1929. Vol. 8. No. 2. pp. 148–157. With 2 text figs. [4 refs.] [In Russian. French summary pp. 223–225.] [Inst. of Microbiol. & Epidemiol., Saratov.]

Spontaneous plague in spermophiles is sporadic in the endemic area, varying in type in autumn and after hibernation. Dead spermophiles may be found in the burrows showing pathological signs of plague but from which *Past. pestis* cannot be recovered nor any other bacillus that might have caused death. Plague among spermophiles, while changing its form and character, persists throughout the year, attaining its maximum towards the end of summer. Towards the end of autumn *Past. pestis* is distinguished by a diminution in virulence, scanty growth and by the formation of capsules and zoogloea.

J. H. T. W.

IIMURA (Yasuzo). [**On Plague of** *Lutreola itatsi itatsi* **and Gamasidae.**]—*Jl. Public Health Assoc. Japan.* 1929. July. Vol. 5. No. 7. [In Japanese. English summary pp. 4–5.]

The author states that during 1922 a dead weasel was found to contain plague bacilli in its organs. He suggests, without any proof, that the weasel was infected by mites on the bodies of rats [why

mites more than fleas ?]. He further mentions that Dr. YAMADI, of the Government Institute for Infectious Diseases, succeeded in 1928 in infecting rats by means of Gamasidae.

J. H. T. W.

FLU (P. C.). Der Antipestbakteriophag und die Prophylaxe und Therapie der experimentellen Pest. [**Antiplague Bacteriophage and the Prophylaxis and Therapy of Experimental Plague.**]—*Zent. f. Bakt.* I. Abt. Orig. 1929. Aug. 21. Vol. 113. No. 5/6. pp. 468–473. [4 refs.] [Inst. for Trop. Diseases & Trop. Hyg., Leyden.]

Bacteriophage injected intravenously in fowls in the opposite vein immediately after injection of virulent plague bacilli did not exhibit in the circulating blood any sign of phage action. Therapeutic tests were instituted in guineapigs which received 1-100th loopful of a 24-hr. weakly virulent plague culture subcutaneously. The bacteriophage treatment, consisting of administration of 1 cc. subcutaneously, was begun immediately, 24 hours and 48 hours after the plague injection, but without any satisfactory saving result or much evidence of delayed death. Oral administration and subcutaneous injection of bacteriophage in white rats also gave little evidence of prophylactic or therapeutic effect.

W. F. Harvey.

NAIDU (B. P. B.) & JUNG (Jamedar Shamsher). **The Relative Toxicity and Immunizing Value of Haffkine's Plague Prophylactic and other Anti-Plague Vaccines Compared.**—*Indian Jl. Med. Res.* 1929. July. Vol. 17. No. 1. pp. 199–213. [1 ref.] [Haffkine Inst., Bombay.]

Three different types of vaccine have been compared : (1) Haffkine's plague prophylactic, which is a broth culture of highly virulent plague bacilli grown for 6 to 8 weeks and composed of culture medium, bacillary bodies and metabolic products, with human immunizing dose of 4 cc. ; (2) an agar-culture vaccine, grown for 2 or 3 days, washed off with normal salt solution and composed of bacillary bodies, with immunizing dose of 1 cc. ; (3) plague nucleo-protein of Lustig, which is an agar culture washed off with normal salt solution, dissolved by alkali and precipitated with weak acid. This precipitate is dried and is issued in the strength of 0·04 gm. nucleoprotein precipitate in 21 cc. alkaline solution, with immunizing dose of 7 cc.

Susceptible rats were employed as test animals and were immunized with 1/8th the human immunizing dose in the case of (1) and (3) and with larger doses in (2). The test dose consisted of 0·003 mgm. spleen pulp of a rat dying of plague within 4 days of injection. This dose, administered subcutaneously, killed about 94 per cent. of the control test animals within 15 days—the period used for estimation of percentage survival. Whether 7 days or 14 days were allowed for the development of immunity between prophylactic injection and infection did not seem to affect the result. These results were : Haffkine's prophylactic and Lustig's nucleoprotein produced about an equal degree of immunity (around 35 per cent.) and both of them a higher immunity than agar-grown vaccines.

W. F. Harvey.

BATCHELDER (A.). **Preparation of Specific Serums and Technic of Agglutination Test with *Pasteurella pestis* detoxified with Formaldehyde.**—*Jl. Infect. Dis.* 1929. May. Vol. 44. No. 5. pp. 403–407. With 3 charts. [6 refs.] [George Williams Hooper Foundation for Med. Research, Univ. of California, San Francisco.]

It has always been difficult to obtain smooth and stable suspensions of *Past. pestis* for agglutination purposes. Suspensions when obtained are liable to disintegrate and autolyse: this autolysis is enhanced by heat and is not prevented by the use of phenol. Immunization of rabbits for the production of high-titre sera is also difficult, as they lose weight and are apt to die or develop a motor paralysis. Formalin suspensions of 25 to 35 billion organisms per cc. get over these difficulties. They are prepared with 0·85 per cent. sod. chloride containing 0·25 per cent. formalin. The organisms are killed in 7 to 8 hours. Sera of titre 1 : 1280 to 1 : 2560, which were highly specific and gave flocculent precipitates, could be easily and rapidly obtained by 3 intravenous inoculations given every other day. The animal was bled 10 to 14 days after the last injection.

W. F. Harvey.

FLU (P. C.). Immunisierung von Ratten gegen Pest mit Hilfe von Extrakten aus virulenten Pestbakterien. (Der Bakteriophag als Lösungsmittel.) [**Immunization of Rats against Plague with Extracts of Virulent Plague Bacilli, using Bacteriophage as Solvent.**] —*Zent. f. Bakt.* I. Abt. Orig. 1929. Aug. 21. Vol. 113. No. 5/6. pp. 473–480. [3 refs.] [Inst. for Trop. Diseases & Trop. Hyg., Leyden.]

Some of the experiments described and the preparation of the vaccine have already been noticed (see this *Bulletin*, Vol. 26, p. 638). The vaccine is safe, sterile and produces no local reaction in animals. Its immunizing action cannot be ascribed to its content in bacteriophage, for this is killed or rendered inactive by the phenol present.

W. F. Harvey.

DE SMIDT (F. P. G.). **Laboratory Notes on Plague in Kenya.**—*Jl. Hygiene.* 1929. July. Vol. 29. No. 2. pp. 201–218. [14 refs.] [Med. Research Lab., Nairobi.]

In "stalactite" cultures the upper part of the growth consists of healthy bacilli in chains, while in the lower part of the growth, where the conditions are more or less anaerobic, the organisms show remarkable involution forms before autolysis. The broth medium used consists of a 20 per cent. 48-hr. autodigest at 37° C. of bullock's pancreas in water, with 1 per cent. peptone, 0·5 per cent. salt and pH 7·0. New strains, obtained from rats and from human subjects, are used for the preparation of vaccine as soon as possible after isolation and test, although experiment showed that the strains need not necessarily be extremely recent. Standardization of vaccine is effected by opacity test of suspended solid and estimation of protein content in solution. Dosage of vaccine and optimum immunity attained receive special attention: 0·3 cc. of Nairobi vaccine is reckoned as the correct

immunizing dose for rats and 3·0 cc. of Bombay vaccine as the correct human dose. It is a mistake to regard the broth of vaccine as the element giving rise to the local and general toxic effects of plague vaccine. These are due to the plague endotoxin, derived from the disintegration of large numbers of bacilli during the long incubation. Serological tests were carried out with local and other strains of *Past. pestis*. The serum used was prepared by injection of rabbits with an old attenuated living strain. Rough colonies of this strain were agglutinated at 1 in 2,500 to 1 in 12,000 and smooth colonies at 1 in 12,000 to 1 in 25,000. The agglutination tests and absorption tests carried out with the serum failed to show any specific variant, out of 71 cultures tested, from the type strain used to provide the serum. No agglutination was obtained with this serum and the organisms of the "haemorrhagic septicaemia" group, *Past. aviseptica, suiseptica, boviseptica,* and *muriseptica.*

W. F. Harvey.

SCHÜTZE (H.) & HASSANEIN (M. A.). **The Oxygen Requirements of *B. pestis* and Pasteurella Strains.**—*Brit. Jl. Experim. Path.* 1929. June. Vol. 10. No. 3. pp. 204–209. [6 refs.] [Lister Inst., London.]

The authors found that suspensions of *Past. pestis* and other pasteurella organisms, which grew quite satisfactorily on planting out, failed to do so when diluted. This failure to grow, when the organisms were lying isolated on nutrient agar plates, has been traced to oxygen sensitivity. Shake cultures result in growth when surface cultures do not. Reducing agents such as sodium sulphite and anaerobic conditions facilitate growth. A specially interesting point in the investigation was the discovery that the addition to the nutrient agar of small quantities of broth culture of *Past. pestis*, sterilized at 60° C. for 1 hour, supplied isolated microbes with the stimulus to growth. This effect was obtainable with many kinds of bacteria besides *Past. pestis*, but not with all. If, however, the augmentor culture were heated to temperatures higher than 70° C., it lost its power of initiating growth, and this loss of power took place even in the absence of oxygen, thus suggesting that not only does the substance here concerned act as a reducing agent, but that it is enzymic in nature. Smooth variants of pasteurella organisms may be more sensitive to lowered oxygen tension than rough variants.

W. F. Harvey.

OTAKA (Yoshio). [**Influence of *Bacillus pestis* on Hydrogen Ion Concentration of Culture Medium and its Carbohydrate Splitting Action.**]—*Byorigaku Kiyo* (*Arch. of Path.*). 1928. Dec. Vol. 4. No. 2. [Summarized in *Japan. Med. World.* 1929. Feb. 15. Vol. 9. No. 2. pp. 54–55.]

Otaka finds that the hydrogen ion concentration of the medium is increased when *Past. pestis* is grown in meat juice and is diminished when grown in peptone water. These are opposite reactions, and when the organism is grown in ordinary bouillon, the resultant reaction

represents the balance between the two. The author therefore believes that it is not advisable to use bouillon or peptone water for the study of the carbohydrate reactions of *Past. pestis* and indeed of any bacterium. One should use media which do not show changes of pH with growth of the test organism. He has found that *Past. pestis* ferments galactose, maltose, dextrin, mannite, laevulose, xylose and dulcite but does not ferment saccharose, lactose nor inulin.

W. F. Harvey.

CONNAL (Andrew), PAISLEY (J. C.), ELMES (B. G. T.) & BOWREY (R.). **The Post-Mortem Signs of Rat Plague in Lagos, Nigeria.**—*West African Med. Jl.* Lagos. 1929. Apr. Vol. 2. No. 4. pp. 176–179. [2 refs.] [Med. Research Inst., Lagos.]

The findings of the Plague Commission in India (*Jl. of Hygiene*, 1907) are supported by the results obtained in Lagos as regards the signs of rat plague. The plague rat shows a bubo, single or bilateral, in the neck, axilla or groin, etc. In a small number of cases (446 out of 2,224) there was no bubo. There is general subcutaneous congestion, a mottled or speckled liver and enlarged spleen; pulmonary congestion with pleural effusion, clear or blood stained. In Lagos there may be, in addition, mesenteric buboes and intestinal haemorrhage. Final diagnosis must be based on the demonstration of *Past. pestis* in stained smears, or by culture or by animal inoculation [this *Bulletin*, Vol. 25, p. 672 (Connal & Paisley)].

J. H. T. W.

MARRAS (F. M.). Osservazioni ed esperienze sulla peste nelle Indie inglesi. [**Plague Observations and Experiments in British India.**]—*Ann. di Med. Nav. e Colon.* 1929. May–June. Year 35. Vol. 1. No. 5/6. pp. 301–335. With 7 plates (2 coloured). [23 refs.]

Dr. Marras, of the Egyptian Sanitary Service, has in this paper compiled statistical records of experiments on rodents in the Haffkine Institute in Bombay. The paper is full of statistics, but does not reveal any new facts. Part II is devoted to an ordinary description of human plague.

J. H. T. W.

TAKAHASHI (K.), CHUAN (Li Te), TO (Yuan Chen), TSUCHIYA (K.) & ABIKO (A). [Kleinere Beitraege zur pathologisch-anatomischen Veraenderung der Druesenpest bei Menschen aus 1928 jaehriger Epidemie zu Chien-Chia-Tein in Mongolia, China.] [**Pathology of Bubonic Plague.**]—*Jl. Oriental Med.* 1929. July. Vol. 11. No. 1. [In Japanese. Germany summary p. 23.] [Hyg. Inst. of S. Manchuria Rly. Co., Dairen.]

The author describes the bacteria and the pathological conditions seen in 7 cases of bubonic plague. Pieces of liver, spleen, kidney, heart and lymphatic glands were examined. The results contain nothing new. [See this *Bulletin* Vol. 22, pp. 374–375 (FUJINAMI, KULESHA).]

J. H. T. W.

ANNALES DE MÉDECINE ET DE PHARMACIE COLONIALES. 1929. Jan.–Feb.–Mar. Vol. 27. No. 1. pp. 102–121.—Bibliographie des travaux récents concernant la peste. **[Bibliography of Recent Work on Plague.]**

This is a classified Bibliography of the recent literature of plague. It will be very useful for reference. Many of the papers therein mentioned have been noticed in this *Bulletin.*

J. H. T. W.

BULLETIN OFFICE INTERNATIONAL D'HYGIÈNE PUBLIQUE. 1929. Apr. Vol. 21. No. 4. pp. 580–586. [2 refs.]—Sur la peste dans l'Inde Britannique [Notes communiquées par le Colonel J. D. GRAHAM]. 1. Résultats des recherches sur la peste poursuivies dans les Provinces-Unies [Dr. GOYLE]. 2. Etude sur les puces du rat dans la zone du Port de Rangoon [Major BILDERBECK]. 3. Notes épidémiologiques sur la peste en Birmanie [Lt.-Col. E. BISSET].

COLOMBANI. Une épidémie de peste bubonique dans le Sous (territoire d'Agadir).—*Bull. Office Internat. d' Hyg. Publique.* 1929. July. Vol. 21. No. 7. pp. 1136–1140.

CORREIA (Alberto Carlos Germano da Silva). La peste dans l'Inde Portugaise.—*Arquivos da Escola Med.-Cirurg. de Nova Goa.* 1929. Ser. A. No. 4. pp. 517–538. With 2 plates.

LEFROU (G.). Contribution à l'étude de la peste au Cayor en 1928.—*Bull. Soc. Path. Exot.* 1929. June 12. Vol. 22. No. 6. pp. 506–520. With 1 map in text. [2 refs.]

SOREL & ARMSTRONG. La lutte préventive contre la peste dans la circonscription de Dakar et dépendances durant l'année 1928.—*Bull. Office Internat. d' Hyg. Publique.* 1929. Apr. Vol. 21. No. 4. pp. 612–618.

THIROUX. La peste à Madagascar, de juillet 1923 à juillet 1928.—*Bull. Office Internat. d' Hyg. Publique.* 1929. Apr. Vol. 21. No. 4. pp. 601–611. With 2 diagrams. [2 refs.]

CHOLERA.

LASNET. Le choléra en 1927 en Indochine. [**Cholera in Indo-China 1927.**]—*Bull. Office Internat. d' Hyg. Publique.* 1929. May. Vol. 21. No. 5. pp. 771–774. With 2 figs.

Cholera, prevalent in 1926, continued into 1927 with an increase in the number of cases especially among the poorer classes and during the dry season when the water levels were low. In the various districts of Indo-China 32,225 cases occurred with 25,170 deaths. Of these no less than 23,054 cases are reported from Tonkin with 18,343 deaths. The sanitary services carried out a large number of anti-cholera vaccinations and 20,427,000 cc. of vaccine were issued by the Pasteur Institute at Saigon. During the first three months of 1928 the figures still remained high, but in August there was a marked diminution in the number of cases.

J. H. Tull Walsh.

JOURDRAN (E.). La campagne anticholérique au Tonkin ; épidémies de 1926–1927. [**The Anticholera Campaign in Tonkin, 1926-1927.**] —*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 170–183. With 5 graphs.

The deltaic region of Tonkin, like that of Bengal, is a well known focus of cholera. Among the factors to which the epidemic of 1926–27 is ascribed, are the inundations of 1926 with subsequent famine. In the town of Haiphong the bursting of the drinking water channels and the mingling of that water with flood water was followed 6 days later by a marked rise in the mortality curve. A description is given of the efforts made to meet the epidemic conditions by means of general anticholera vaccine and general sanitary measures.

W. F. Harvey.

KIRIBAYASHI (S.). **On the History of Cholera Epidemics in Formosa since 1895.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 157–169.

The problems of endemic and epidemic cholera as they affect India are essentially the same for many other or most other eastern countries. In Formosa " it may be readily supposed that there has always been cholera epidemic due to the marine communication to China." In this island epidemic prevalence is shown every 7 or 10 years. Such epidemics are regarded as due to spread from the China coast where the prevalence of the disease goes in parallel with that in Formosa. Some of the other factors required for epidemic prevalence, such as exist especially in a primitive population, are referred to.

W. F. Harvey.

IIMURA (Iasuzo). O cholera em relação á immigração japoneza. [**Cholera in Relation to Japanese Immigration.**]—*Folha Med.* 1929. June 5. Vol. 10. No. 16. pp. 184–185.

The author belongs to the Ministry of Sanitation in Tokio and shows how cholera may be taken by immigrants into Brazil from Asia. He

refers to the Articles of the Universal Sanitary Conference of 1926 in which rules are laid down for the examination of passengers embarking or disembarking at the various ports. There does not seem to be much danger of serious epidemics occurring on Japanese ships and in the case of the "Hawaii Maru" he points out that cholera was prevalent in Singapore where the ship called [this *Bulletin*, Vol. 26, p. 85 (TULL)].

J. H. T. W.

CORREIA (Alberto Carlos Germano da Silva). Le choléra aux Indes Portugaises. (Epidémiologie, climatologie sanitaire et prophylaxie.) [**Cholera in Portuguese India.**]—*Arquivos da Escola Méd. Cirurg. de Nova Goa.* 1929. Ser. A. No. 4. pp. 425–460.

This paper which was presented to the International Congress of Tropical Medicine at Cairo contains a history of cholera in Goa and other parts of Portuguese India. Epidemics from old records are noted from 1553 and onward, every few years, to 1927. The effect of pilgrimages, famines, etc., is described, and a long list of places in India to which pilgrims resort is given. The relation of climate to epidemics is considered and the author says that the great cholera epidemics have occurred in years with very intense monsoon rainfall.

J. H. T. W.

RUSSELL (A. J. H.). **Statistical Studies in the Epidemiology of Cholera.** —*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 131–156. [26 refs.]

The author has published much valuable material on the subject of the statistical investigation of cholera epidemics and indeed on epidemiology in general. He refuses to accept generalizations that are based upon data which have not been subject to modern statistical analysis. In India records of cholera exist from 1866 onwards. Although these refer almost entirely to the more violent outbursts of the disease and their registration has been defective, percentage errors are not so great as to nullify statistical investigation. Thus it has been found possible to forecast epidemics of cholera 2 or 3 months ahead of an outbreak. The provinces of India are divisible into endemic and epidemic cholera areas, a most important distinction. Climatic conditions in their bearing on cholera incidence have been studied carefully by the method of partial correlation for individual factors. Multiple coefficients, which give a single quantitative value to the component factors making up a climatic influence, have been calculated. The tentative conclusions reached are very interesting. Epidemic outbursts are mere intensifications of the endemic disease. Favouring climatic factors, which precede such outbursts, are the association of high relative humidity with high temperature accompanied by intermittent rains. Other conditions than these, however, probably play their part and acknowledgment is made of the rôle of the chronic carrier in this epidemiological complex. The conditions at fairs and festivals may stimulate to activity the latent infection in these persons.

Anticholera vaccination, while admitted to have its effect, is not regarded as a practical measure for the annual recurring protection of millions of pilgrims. The paper ends with the insistence on the need to create a public sanitary opinion in India before all the influences at work in the propagation of cholera will come under control.

W. F. Harvey.

RUSSELL (A. J. H.) & SUNDARARAJAN (E. R.). **The Epidemiology of Cholera in India.**—*Indian Med. Res. Memoirs. Supplementary Series to Indian Jl. Med. Res.* 1928. Oct. Memoir No. 12. 204 pp. With 35 graphs & 1 map. [66 refs.] [Summary appears also in *Bulletin of Hygiene.*]

The first four parts of this monograph have been noticed in the *Bulletin of Hygiene* [1927, Vol. 2, p. 45; 1928, Vol. 3, p. 357]. The 5th part is a thorough arithmetical study of the intercorrelations of the five variables, monthly deviations of cholera mortality from a moving average, monthly rainfall, mean humidity, mean temperature and mean barometric pressure in the 13 districts of India selected for study.

All the coefficients of correlation between the measure of cholera incidence and the other variables to the highest possible order, viz., the 3rd, are tabulated and also the multiple correlation of cholera incidence with the other four variables. The inter-relations of the meteorological variables are also fully examined. The most important practical conclusion drawn is perhaps the following.

"This investigation has shown that it is no longer theory to suppose that climatic factors have a definite relationship with the incidence of cholera in India. The association of high relative humidity with high temperature, accompanied by intermittent rains, forms the most favourable atmosphere for development of the disease. The presence of endemic centres from which epidemics spring at short intervals is also a fact which must be accepted. No single factor, however, can be held responsible for the periodic waves of the disease which devastate the provinces of India, and it must be recognized that these waves are preceded by conditions too complex to admit of complete solution with the help of available data. Individual susceptibility, foci of infection, favourable atmospheric conditions, fairs and festivals, carriers, insanitary habits, all play their part in a manner which defies analysis."

[This monograph is a record of by far the most complete epidemiological-statistical study of cholera which has ever been made. Only those who have themselves done work of this kind can properly appreciate the labour it has entailed. The work must be studied by all who intend to work on the subject. When so much has been given it may seem ungrateful to ask for more, but a useful supplement would be a series of comparisons of the actually observed deviations of cholera mortality from the trend with those required by the several multiple regression equations. In other words, it would be interesting to see how nearly a knowledge of the "independent" meteorological variables enables one to estimate the "dependent" variable when the relation is taken to be expressible by an equation of the first degree.]

M. Greenwood.

DUNN (C. L.) & KHAN (Saranjam). **Cholera in Hardwar.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 184–207. With 5 charts & 4 maps. [3 refs.]

[The stigma attached to the term "endemic" focus of cholera whether applied to the region of the Don in Russia, to certain provinces in India, to French Indo-China, or to the Japanese possession of Formosa, is one which is not appreciated locally.]

The first Sanitary Commissioner of the United Provinces in India wrote in 1879 that: "Of all the cholera disseminating centres of India Hardwar is the most important . . . The majority of the pilgrims going to Hardwar come from the Punjab and when this, as it were, buffer state is itself invaded the disease is more likely to attack Persia, Afghanistan, Russia and finally Europe and America. We know that many of the pandemics of Europe have emanated from the pilgrim centre of Hardwar." The authors of the present article contend from their data that while Hardwar may as a famous pilgrim centre, be on occasion a locality from which epidemic spread may take place, the town has really in the first instance been itself infected with cholera from outside. "Hardwar is not an endemic focus of cholera." Importation is responsible for the cholera prevailing in the town, as is shown for example (Table) by comparison of the deaths from cholera in Hardwar Union Municipality and the rural area of Hardwar. The latter, in strong contrast to the former, is seen to be "almost entirely free from cholera for the whole period of 56 years available." As practical preventive measures against pilgrim cholera for Hardwar the authors advise: (1) Immediate introduction of an efficient underground water-carriage system of sewage disposal; (2) the extension of the existing municipal water supply; (3) the chlorination of the bathing pool; (4) anti-cholera inoculation.

W. F. Harvey.

TOMB (J. Walker) & MAITRA (G. C.). **Some Observations on the Bacteriology and Epidemiology of Cholera.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 208–216. With 1 chart in text. [10 refs.]

The use of the "open-bowl" method of cultivation of vibrios has, it is contended, enabled the authors to conclude that agglutinating cholera vibrios in cholera stools added to village tanks are permanently changed *en masse* into the non-agglutinating form after 24 to 36 hours (see this *Bulletin*, 1927, p. 460). By means of the method also they have been able to show that as many as 33 per cent. of the inhabitants of a mining settlement in India are chronic carriers of non-agglutinating vibrios. Sporadic cholera is identical with epidemic cholera, with these important differences that the associated vibrios in the former case are at most feebly infectious and are non-agglutinating. Attempts at conversion of the non-agglutinating vibrio into the agglutinating, although showing that the two were closely allied serologically, gave inconclusive and inconstant results. The results were more favourable for the reverse process as in the above-mentioned tank experiment. Extended examination of the stools of epidemic cholera convalescents have showed that 80 per cent. become chronic carriers of non-agglutinating vibrios. An equally extended examination of the

stools of healthy persons and survivors of epidemic cholera has not furnished a single permanent carrier of agglutinating vibrios. The conclusion of the authors, already noticed in this *Bulletin* is

"That the non-agglutinating vibrio (which is itself capable of causing clinical cholera) takes on the agglutinating characteristic under certain biochemico-physical conditions in the human intestine the nature of which are at present unknown, and in this mutation or epidemic form is the cause of epidemic cholera, since it is not unreasonable to assume that a characteristic so unstable may as easily be acquired as lost. Non-agglutinating intestinal vibrios, therefore, in our opinion constitute the reservoir of cholera both epidemic and endemic. . . . "

W. F. Harvey.

GUPTA (J. Das). **A Note on Cholera in Infants.**—*Indian Med. Gaz.* 1929. Sept. Vol. 64. No. 9. pp. 489–491. With 4 charts in text.

The author states that, although cholera is seldom seen in infants, he had, during the last epidemic in Calcutta, a number of cases in the fourth week in May and the first week in June at the "Babies Home," Calcutta. The first two cases were difficult to diagnose and were not at once recognized as cholera (they are described in detail). When the third case arrived a sample of the stool was cultured and found to contain vibrios and agglutination tests were positive. Of four other cases three gave the same results. It was not possible to find the source of infection, but when the nursing staff was changed and all the babies were inoculated with anti-cholera vaccine the epidemic stopped.

J. H. T. W.

PEREIRA (J. M.). **A District Scheme for Cholera Control.**—*Indian Med Gaz.* 1929. Aug. Vol. 64. No. 8. pp. 455–456.

This scheme was started five years ago as an experiment and being found successful was adopted with Government sanction as a permanent measure in the Santal Parganas. The staff necessary to carry out the scheme consists largely of personnel already in District Board employment, the outlying rural dispensaries, the sub-divisional headquarters dispensaries and the district headquarters hospital which forms the "base and reserves." The district is divided into areas of control and each is equipped with a "Cholera unit box." The medical officer, dresser and staff are already there and a radius of five miles is allotted to this unit. The occasional absence of the medical officer is compensated by the value of his services in preventing and treating cholera in the outlying areas. The equipment is described in detail. The unit, apart from medicines and disinfectants, contains one hundred doses of anti-cholera vaccine. As a further line of defence there is a "flying column" which may be sent anywhere at any time. The full equipment carried by this column is given in the paper. It includes a transfusion flask with cannula and tube and is altogether satisfactory. With 21 centres in the first and second line and a liberal base supply the initial expenditure with staff amounted to Rs. 5,000 and the recurring charges are about Rs. 2,000 annually.

J. H. T. W.

i. KHAN (Saranjam). **On the 'Carrier' Problem of Cholera.**—*Indian Jl. Med. Res.* 1929. July. Vol. 17. No. 1. pp. 147–163. [29 refs.]

ii. ——. **On the Reservoir of Epidemic Cholera.**—*Ibid.* pp. 164–169.

i. The author is opposed to the general belief that there are chronic carriers of cholera as in the case of enteric fevers. In his paper he points out that there is no chronic infection of the gall bladder by *V. cholerae.* The majority of cholera cases get free of the vibrio within a few days. The author's results at Hardwar showed that 95 per cent. of all cases and contacts of cholera are free from vibrios within 14 days, the remainder within one and a half months and it is doubtful if these latter are infectious at the end of 1½ months since the small number passed would hardly cause fresh cases of cholera. No outbreak due to such a source has been recorded.

ii. The reservoir of cholera is not "chronic carriers" of *V. cholerae* nor is it the carriers of the inagglutinable vibrio. The real reservoir is in endemic areas and in patients suffering or recovering from cholera. The only sources of infection are patients in the acute stage for about 4 days, also some, to a lesser extent, in the convalescing stage for about 14 days; and perhaps a few in the incubation period.

J. H. T. W.

RUSSELL (A. J. H.). **Besredka's Cholera Bilivaccin versus Anti-Cholera Vaccine: a Comparative Field Test.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 523–530. [12 refs.] [Summary appears also in *Bulletin of Hygiene.*]

Tests were carried out in an Indian area definitely proved to be an endemic centre of cholera. The vaccines were administered in 360 villages having a total population of about 650,000. Anti-cholera vaccine alone was given in 236, and bilivaccine alone in 52 villages. In the remaining 72 villages, the two vaccines were used side by side, about one third of the population being given inoculations, one-third treated with bilivaccine and the remaining third taken as controls. The work covered three epidemics and lasted 18 months.

It was found that the attack and case mortality rates among the unprotected were 5·6 and 1·9 times as high as among those given the full course of bilivaccine. With anti-cholera vaccine, among direct contacts, unprotected individuals showed attack and case fatality rates 5·6 and 5·8 times as high as those inoculated twice. Much the same degree of protection from attack is, therefore, given by the full dose of bilivaccine and the double inoculation with anti-cholera vaccine; but the case mortality is appreciably lower among those given inoculations.

Further analysis shows that immunity does not definitely exist until 3 days after inoculation, and that two inoculations confer a definitely higher degree of protection than one inoculation. About 2–3 days are necessary for the development of maximum immunity after full treatment with bilivaccine.

A useful discussion is appended.

P. L. McKinlay.

TOMB (J. Walker). **A Note on the Value of Medicinal Treatment in Cholera.**—*Indian Med. Gaz.* 1929. May. Vol. 64. No. 5. pp. 246–247.

This paper refers to the treatment of 723 cases of cholera in the Asansol Mining Settlement and the essential matter is given in three "tables":—

TABLE III.

Analysis of the results of treatment of cholera cases by various methods in the Asansol Mining Settlement during the years 1922 *to* 1928.

Treatment.	1922.		1923.		1924.		1925.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
"Cholera Mixtures"	268	128	131	78	236	152	86	36
Saline Injections	25	11	29	10	47	33	27	13
Homeopathy ...	15	3	56	31	67	32	27	11
Essential Oils' Mixture ...	—	—	78	16	111	28	33	13
Total number of treated cases ...	—	—	—	—	—	—	—	—
Untreated ...	39	26	50	48	74	72	21	16

Treatment.	1926.		1927.		1928.		Total		
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Percentage case mortality.
"Cholera Mixtures"	624	347	177	68	331	172	1,853	981	52·9
Saline Injections	86	37	14	5	48	21	276	130	47·1
Homeopathy ...	136	69	47	16	21	11	369	173	47·0
Essential Oils' Mixture ...	21	6	24	5	61	19	328	87	26·5
Total number of treated cases ...	—	—	—	—	—	—	2,826	1,371	48·5
Untreated ...	112	105	26	26	76	69	398	362	91·0

J. H. T. W.

ANDU (A. B.) & VAN NIEKERK (J.). Choleratoxine. [**Cholera Toxins.**] —*Acta Leidensia* (*Scholae Med. Tropicae*). 1928. Vol. 3. pp. 203–251. With 3 figs. on 2 plates. [4 pages of refs.] Also in *Zent. f. Bakt.* I. Abt. Orig. 1929. June 28. Vol. 112. No. 6/8. pp. 519–547. With 3 text figs. [Numerous refs.] [Inst. for Trop. Med., & Pharmaco-Therap. Inst., Reichs Univ., Leyden.]

The research of the authors is mainly concerned with the comparison of the action of two vibrio strains, one Calcutta 30 of HAHN and HIRSCH,

the other a true cholera strain 169 of the Leyden Institute. They find that the most suitable medium for growth is a 0·1 per cent. glucose bouillon whose pH can be kept constant, even with 3 days culture, at pH 7·6–8 by the addition of 10 per cent. phosphate buffer solution of pH 8 and 2 per cent. calc. carbonate (chalk). Turbidity of the culture was already apparent after 2 hours incubation. The two cultures corresponded closely in their morphological and cultural characters but the serological reactions show that Calcutta 30 could not be regarded as a cholera vibrio. The toxin of the former, however, could immunize a guineapig against a 10-fold lethal dose of the living culture of strain 169. Tests were carried out with this toxin on the heart and intestine of a rabbit. It paralysed the heart. Small doses stimulated contraction of the intestine while large doses paralysed.

W. F. Harvey.

HAHN (Martin) & HIRSCH (Julius). Studien ueber das Choleragift. [**Studies on Cholera Toxin.**]—*Ztschr. f. Hyg. u. Infektionskr.* 1929. July 24. Vol. 110. No. 2. pp. 355–381. With 6 text figs. [15 refs.] [Hyg. Inst., Univ., Berlin.]

Development of knowledge of ferment action has done away with the distinction between ferment and enzyme. So also may further knowledge of bacterial toxins result in abandonment of the present differentiation of ecto- from endo-toxin. Acontinuous cultivation procedure without exhaustion of medium is described for cholera which is dependent on fractional addition of sugar and maintenance of alkaline reaction. Cholera toxin acts upon guineapigs by producing primarily an acute condition with fall of temperature followed by a quiescent stage and death from secondary lesions. The labile cholera toxin can be preserved as an active dry preparation and can be purified by dialysis. An active antiserum is obtainable by immunization of the goat and the horse. Toxin production is exhibited especially by those strains, still regarded as true cholera, which are haemolytic on sheep blood-agar plates. That there is a close relation between haemolytic potency and toxic action receives confirmation from the fact that the same serum quantities are required to neutralize the minimum lethal dose and the haemolytic action of that dose.

W. F. Harvey.

VAN RIEMSDIJK (M.). Der Einfluss des Sauerstoffs auf die Beweglichkeit und Form der Choleravibrionen. Der "Dauer"-hängende Tropfen. Dem Andenken meines unvergesslichen Meisters, Professor Dr. R. H. Saltet, gewidmet. [**Influence of Oxygen on the Motility and Form of Cholera Vibrios. Long Continued Observation in Hanging Drop.**]—*Zent. f. Bakt.* I. Abt. Orig. 1929. July 30. Vol. 113. No. 3/4. pp. 161–189. With 3 text figs. [2 refs.]

Oxygen has a decided influence on the motility of cholera vibrios. Those vibrios obtained from underneath the pellicle are much more sensitive to stimuli than those of the pellicle itself. From being sluggishly motile they become autoagglutinated and exhibit strange involution forms. Later still they develop active motility. The cycle ends with loss of motility and the appearance of the smallest round vibrio forms. Many of the involution forms are phantastic and may

be of great length. The vibrios from the pellicle, in contrast to this picture, become less motile, shorter, plumper and finally small vesicles. [See also this *Bulletin*, Vol. 26, 1929, p. 87.]

W. F. Harvey.

BRAHMACHARI (B. B.). **Non-Agglutinating Vibrios, their Relation to the Typical** *Vibrio cholerae.—Far Eastern Assoc. Trop. Med. Trans: Seventh Congress, British India, 1927.* Vol. 2. pp. 225–234. With 1 chart in text. [5 refs.]

An examination during 12 months of 2,490 healthy persons and 496 surface tanks furnished 1·2 per cent. agglutinating and 12·6 non-agglutinating vibrios in the former case, 1·8 per cent. agglutinating and 34·9 per cent. non-agglutinating in the latter case. No agglutinating vibrios were isolated from July to October, that is, during the season of freedom from the disease. The characters of 68 of the non-agglutinating vibrios were investigated serologically and it was found that for over six months none of these agglutinated with standard cholera antiserum. After that interval of time, however, a change began to take place in some of the strains. As many as 58 per cent. developed response to anticholera serum, two to the extreme titre of 1/8000 and 1/16000 respectively. One strain, on cultivation in its own homologous serum, came to agglutinate with standard cholera serum only, at the titre limit of 1/8000. Three strains produced, in rabbits under immunization to them, sera which also agglutinated the typical cholera vibrio. It is contended, therefore, that over 58 per cent. of the non-agglutinating vibrios specially investigated have been transformed into agglutinating vibrios and are, in fact, nothing else than true cholera vibrios.

W. F. Harvey.

UKIL (A. C.). **The Action of Cholera Convalescent Serum on Comma Vibrios.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 2. pp. 222–224. [1 ref.]

Thirty sera of cholera convalescents were tested for agglutinating and bacteriolytic potency. The distribution of the agglutination titres was: 10 with 1/1000, 9 with 1/500, 6 with 1/100 and 5 with nil or doubtful titre values. Bacteriolytic titres followed the agglutination titres closely. The results were that, 18 sera produced complete lysis, 7 a partial lysis (few colonies on plates) and 5 were of very slight potency.

W. F. Harvey.

STUTZER (M.). Ueber choleraähnliche Vibrionen. [**Cholera-like Vibrios.**]—*Zent. f. Bakt.* I. Abt. Orig. 1929. July 8. Vol. 113. No. 1/2. pp. 28–35. [9 refs.] [State Microbiol. Inst., Rostow a. D.]

The views which would identify water vibrios and fish vibrios with the cholera vibrio are well known. If they held good, then Rostov on the Don would have to be regarded as a locality in which cholera was endemic. The present research is not directly concerned with the general question so much as with the study of 14 vibrio cultures isolated from hospital patients of this district who suffered acutely in

1927 from gastrointestinal disturbance. The organisms in question were found to belong to two species, (1) *Vibrio paracholerae* (*s. phosphorescens*) and *Vibrio alcaligenes*. The former of these is closely allied to *V. cholerae* in its morphology, its fermentation of carbohydrates and its cultural characters, while both organisms differ markedly from it serologically. Agglutination tests with sera of the Don river vibrios showed them to be identical with the vibrios isolated from the stools of the patients. The dates of appearance of vibrios in the river water and their correspondence with the onset of symptoms in the patients are important. Of the 14 cultures, 3 were isolated in June, 6 in August and 5 in September. It was on the 28th May that paracholera water vibrios began to appear in the Don. By June 20th every water examination demonstrated their presence; they rapidly began to disappear from October 1st and could no longer be found by October 19th. These Don water vibrios were also to be found in the Sea of Azov. No support is given to the idea that the paracholera vibrio is only a variant of the true cholera vibrio.

W. F. Harvey.

BASSINA (S.). [Biologie der Wasservibrionen des Donflusses.] [**Biology of Water Vibrios of the River Don.**]—*Berichte des Mikrobiologischen Staats-Instituts z. Rostow am Don.* 1929. Feb. No. 6. pp. 5–46. [2 pages of refs.] [In Russian. German summary pp. 48–49 With 4 figs. on 2 plates.]

Morphologically the acid-forming vibrios, both phosphorescent and non-phosphorescent, and the alkali-forming vibrios are identical. Those of the acid-forming group are closely related culturally to the cholera vibrio, but the alkali-forming vibrios are quite distinct. Not one of the Don river paracholera vibrios was agglutinated by cholera serum nor was an acid-forming vibrio agglutinated by the serum of an alkali-forming vibrio. Pathogenic properties were tested on guineapigs. None of the acid-forming vibrios were pathogenic in doses of 0·1 cc. of a 24-hr. bouillon culture. In the investigation of the phenomenon of dissociation three variant types of colony were separated—transparent, wrinkled and of dull surface.

W. F. Harvey.

KHAN (Saranjam) & AGARWAL (Mahendra Nath). **On the Duration of the Life of Vibrios in the Ganges and Jumna River Water.**—*Indian Jl. Med. Res.* 1929. Apr. Vol. 16. No. 4. pp. 993–1008. [4 refs.]

These two rivers possess high sanctity for Hindus and the religious gatherings which take place upon their banks and especially at their junction are generally considered to be important centres for the spread of cholera. Not only is actual bathing in these waters an important religious ceremony, but the water is taken away by pilgrims to their distant homes. Two organisms were used by the authors in test, one an inagglutinable vibrio with the morphological and cultural characters of the cholera vibrio and the other an agglutinable cholera vibrio. The inagglutinable vibros survived in boiled river water for 9 to 11 days and in unboiled water from 3 to 7 days. A significant difference in the duration of life of the vibrios was found for the different unboiled waters. Jumna and well-water from the junction of the rivers was more vibriocidal than Ganges water.

W. F. Harvey.

BISCEGLIE (Vincenzo). Ueber ein filtrierbares Virus, das aus cholerakranken Tieren gewonnen wurde. Neue Versuchsergebnisse. [**A Filterable Virus from Cholera-Infected Animals. New Results.**] —*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1929. Aug. 1. Vol. 62. No. 5/6. pp. 437–446. [11 refs.] [Inst. of General Path., Univ., Bologna, & Inst. of General Path., Univ., Modena.]

Much discussion has centred round the subject of filterable forms of visible organisms. The author has not had the success claimed by others in demonstrating that culturable forms of typhoid or cholera organisms are obtainable from the centrifuged deposit of filtrates through Berkefeld candles nor that such deposit contained any bacillary fragments. The same negative results were obtained with the centrifuged deposit of filtered suspensions of liver, spleen and kidneys of guineapigs dying from intraperitoneal injection of cholera vibrios. What then is the evidence for the existence of an invisible filterable form of the cholera vibrio and what is its nature? These facts may be summarized as follows: —

(1) Fragments of organs of cholera-infected animals, although they showed themselves devoid of visible or culturable organisms, could produce in fresh animals the same picture of disease as the original microbic cultures, stimulate the development of agglutinins and render the animals immune to several lethal doses. Moreover the disease picture was transmissible in series by suspensions of the organs of the dead animals.

(2) Nucleoproteins extracted from the organs of cholera-infected guineapigs and inoculated into fresh guineapigs produced rise of temperature, progressive wasting and the death of the animal.

(3) The nucleoproteins extracted from the organs of the previous animals, failed to produce disease symptoms or to develop any immunity to cholera vibrios. Nor was it possible to transmit the disease in new animals.

(4) It is not possible to define the nature of the filterable virus obtained from cholera vibrios, but in any case the researches here set out seem to exclude the possibility that the virus is bound to nucleoprotein and that it is an organized living thing.

W. F. Harvey.

CHATTERJEE (Jagadish Chandra). Certain Cases with Symptoms simulating Cholera, possibly caused by Round Worm Infection.—*Calcutta Med. Jl.* 1929. Apr. Vol. 23. No. 10. pp. 568–571.

DUNN (C. L.). Sur l'épidémiologie du choléra dans les Provinces-Unies.—*Bull. Office Internat. d'Hyg. Publique.* 1929. May. Vol. 21. No. 5. pp. 764–770. [2 refs.]

RUSSELL (A. J. H.) & SUNDARARAJAN (E. R.). The Epidemiology of Cholera in India.—*Indian Med. Res. Memoirs. Supplementary Series to Indian Jl. Med. Res.* 1928. Oct. Memoir No. 12. 204 pp. With numerous graphs. [66 refs.]

TROPICAL OPHTHALMOLOGY:

A REVIEW OF RECENT ARTICLES.—XII.*

CONJUNCTIVA.—*Phlyctenular Conjunctivitis.*—PILON[1] has discussed LIAN'S paper on phlyctenular conjunctivitis (see this *Bulletin*, Vol. 26, p. 504) and forms the opinion that the disease is not a typical phlyctenular conjunctivitis, but is a non-specific condition liable to accompany various inflammations of the conjunctiva.

Trachoma.—MORAX[2] after studying the statistics for the past twenty-five years of the Lariboisière Hospital, has discussed the question whether there has been any real increase of trachoma in Paris. He has come to the conclusion that any slight increase there may be is due to the influx of infected foreign and colonial labourers which has occurred in response to the demands of industry. TALBOT[3] notes with approval the recent order of the Tunis authorities by which trachomatous subjects, drawn for conscription, are no longer exempt from serving. Such conscripts are now to be placed in special units until they are cured. He states that in the past exemption has led to a deliberate spread of the disease owing to the desire to evade military service. The Montana State Department[4] has investigated the prevalence and the incidence of trachoma among 3,158 school-children in the State; 236 of the children were found to be infected. Extreme care was taken to ensure accuracy in diagnosis. The three experts who composed the board separately examined each child and the diagnosis, when positive, represented their joint opinion. The object of the inquiry was: (1) to determine as accurately as possible the amount of trachoma actually present amongst the white children who were attending schools on and adjacent to the Indian reservation; and (2) to determine the importance of association in school as a factor in the spread of the disease. The investigators concluded that infection mostly occurred in the children's own homes and not at school.

BURNIER[5] states that trachoma is very common in St. Paulo. Many patients attending hospital for other diseases bear scars of former trachoma. He thinks, however, that much pseudo-trachoma exists. He prefers to classify the term trachoma as "pure" and "complicated" rather than "acute" and "chronic."

PILLAT[6] believes that trachoma is "a menace to the population of China." The disease is met with to an appalling extent throughout the entire land. It is, however, of a relatively mild nature, being most

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* For the eleventh of this series see Vol. 26, pp. 504–510.

[1] PILON (P. J. J. R. T.). Eenige opmerkingen omtrent de conjunctivitis phlyctaenulosa in de tropen.—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. June 10. Vol. 69. No. 6. pp. 565–571.

[2] MORAX (V.). Le nombre des trachomateux a-t-il augmenté à Paris depuis la guerre.—*Rev. Internat. du Trachome.* 1929. Jan. Vol. 6. No. 1. pp. 22–25. With 1 text fig.

[3] TALBOT. L'aptitude au service militaire des trachomateux en Tunisie.—*Rev. Internat. du Trachome.* 1929. Jan. Vol. 6. No. 1. pp. 28–30.

[4] CROUCH (J. H.). A Trachoma Survey of 29 Public Schools on or near Indian Reservations in Montana.—*Public Health Rep.* 1929. Mar. 22. Vol. 44. No. 12. pp. 637–645.

[5] BURNIER (J. Penido). O trachoma em S. Paulo.—*Brasil-Medico.* 1929. July 20. Vol. 43. No. 29. pp. 828–830.

[6] PILLAT (A.). About the Trachoma Problem in China.—*China Med. Jl.* 1929. Feb. Vol. 43. No. 2. pp. 87–103. [10 refs.]

frequently of a follicular type, and spontaneous cures are not uncommon. He favours treatment by copper sulphate, but makes the rather questionable statement that its use may, within limits, be entrusted to laymen without danger. Education regarding the disease must always be an important factor in its eradication.

WORMS and MARMOITON[7] have reviewed the subject in a lengthy paper. The review represents current French opinion on trachoma, but throws no fresh light on the disease. The authors favour Abadie's method of deep galvano-puncture of the upper fornices.

FOX[8] believes that trachoma did not exist amongst the Indians until they were brought into close contact with the white population; it is therefore a comparatively recent disease amongst the Red Indians. He favours surgical treatment of the disease: roller forceps or grattage followed by a vigorous scrubbing with perchloride of mercury in the early stages and excision of the tarsal cartilage, often combined with a canthotomy in the later stages.

AFANASSIEVA[9] entirely disagrees with the views and observations of TRAPESONTZEVA (mentioned in this *Bulletin*, Vol. 25, p. 477) regarding the non-specific nature of the corpuscles of Prowazek. He thinks this author has not been dealing with the true corpuscles. These stain a blue-violet with Giemsa, but Trapesontzeva has described an entirely different product which has a different colour reaction. MORAX[10] has made many histological examinations of tissue obtained from corneae affected by trachoma, and has formed the opinion that the corneal changes are not caused mechanically by the friction of the altered conjunctival lining of the lid, but are due to a development in the cornea of the same infectious agent as caused the conjunctival changes.

AUBARET[11] recognizes that it is not always easy to diagnose trachoma from other conjunctival affections which may simulate it. In view of recent bacteriological findings, however, the classical conception of the disease as being of a truly specific nature must not be lightly discarded. He considers that the three signs of the condition, described by MILLET[12] give important aid. These are: (1) a kaleidoscopic distortion of the ophthalmoscopic red reflex which is caused by facets on the corneal surface; (2) an alteration in the vessels seen in the tarsal conjunctiva; these run irregularly and no longer pursue a course parallel to the meibomian glands; (3) the appearance of small, shell-like opacities within the upper border of the limbus. The author adds to these a fourth sign, viz., a swollen, protruding and granular condition of the semilunar fold.

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7 WORMS (G.) & MARMOITON (J. E.). Le trachome.—*Arch. Méd. et Pharm. Milit.* 1929. Jan. Vol. 90. No. 1. pp. 1–59. [12 refs.]

8 FOX (L. Webster). The Indian and the Trachoma Problem.—*Amer. Jl. Ophthalm.* 1929. June. Vol. 12. No. 6. pp. 457–468.

9 AFANASSIEVA (H. A.). Interprétations erronées des corpuscules de Prowaczek. (Quelques observations à propos d'un article du Dr. Trapesontzeva (de Moscou), paru dans les *Archives de l'Institut Pasteur de Tunis*, 1927.—*Rev. Internat. du Trachome.* 1929. Apr. Vol. 6. No. 2. pp. 55–64.

10 MORAX (V.). Complications cornéennes du trachome.—*Rev Internat. du Trachome.* 1929. Apr. Vol. 6. No. 2. pp. 90–94.

11 AUBARET. Notes sur la séméiologie et l'étiologie du trachome.—*Rev. Prat. Malad. des Pays Chauds.* 1928. Aug. Year 7. Vol. 8. No. 8, pp. 424–431. [3 refs.]

12 MILLET (A. H.). Trois petits signes du trachome cicatriciel.—*Ann. d'Oculistique.* 1924. Vol. 161. pp. 656-663. With 1 text fig.

MEYERHOF[13] remarks upon the surprisingly varied characteristics the disease may present in Egypt and describes some of the graver forms met with there. He states that gelatinous degeneration and trachomatous xerosis are less common in Egypt than in colder countries. Excessive cicatrization with its destructive sequelae, however occur very frequently in Egypt. The case described by DELANOË[14] serves to demonstrate the protean nature of the disease. The patient was an Arab woman aged about 20, and her left eye alone was affected. Very abundant, hyperplasic granulations covered the tarsal conjunctiva and spread on to the bulbar portion of the membrane. The cornea was subject to pannus crassus with some ulceration. Even the lachrymal gland was swollen. By contrast the right eye was wholly unaffected and remained so. The usual forms of treatment proved entirely ineffectual. Chaulmoogra oil, however, afforded the most relief. After a month's local treatment intravenous injections of novarsenobenzene were administered. These were followed by an immediate improvement although there was no indication of any syphilitic infection. Within a month the patient was practically well. Unfortunately a relapse took place three months later. It is suggested that this was due to a reinfection from her small son who suffered from the disease. It is interesting to note that injections of novarsenobenzol failed to relieve this second attack of the disease. WILSON[15] when experimenting with trachoma inoculation in monkeys found them liable to contract spontaneously a form of follicular conjunctivitis. This fact indicates that any conclusion based upon the result of animal inoculation must be received with extreme caution. The author pleads for a clear understanding regarding what is and what is not trachoma. Strother SMITH[16] has noted the great prevalence in India of simple chronic conjunctivitis, the probable cause of the disease being constant irritation from dust, smoke, etc., and states that the condition is often confounded with trachoma. He thinks most trachoma cases in India commence during childhood. In diagnosing trachoma he considers that freedom of the bulbar conjunctiva from infection constitutes a strongly positive indication of the disease. He recommends painting the conjunctiva with a solution of silver nitrate 60 grains to the ounce, followed by a douche of electrolytic chlorine solution 1 in 80. The eye is then rested from treatment for about two days. He remarks that the chief point is not to overdo the silver nitrate treatment. [A wise caution to be heeded whenever caustic solutions are applied to the conjunctiva, but specially so when the solution is of such concentration as that recommended by the author.]

CORNEA.—The question of how best to tattoo a leukoma of the cornea has received some attention of late. BANAJI[17] claims satisfactory

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13 MEYERHOF (Max). Sur quelques formes graves de trachome observées en Egypte.—*Rev. Internat. du Trachome.* 1929. Apr. Vol. 6. No. 2. pp. 69–75.

14 DELANOË (E.). Trachome unilatéral à allure particulièrement grave. Traitement par l'huile de chaulmoogra et les injections intraveineuses de novarsénobenzol.—*Rev. Internat. du Trachome.* 1929. Jan. Vol. 6. No. 1. pp. 1–6.

15 WILSON (Rowland P.). Nouvelles notes sur le problème étio-pathologique du trachome.—*Rev. Internat. du Trachome.* 1929. Apr. Vol. 6. No. 2. pp. 76–90.

16 SMITH (F. F. Strother). Trachoma.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 311–316.

17 BANAJI (B. P.). Tattooing of the Cornea with Platinum Chloride Solution for Leucoma.—*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. p. 201.

results from the use of platinum chloride solution. According to his technique the surface epithelium of the leukoma is removed by a Graefe knife or a sharp spoon. Platinum chloride in 2 per cent. solution is then applied on a moistened swab to the denuded area for a period of two minutes. Eight to ten drops of a freshly prepared solution of hydracin hydrate (2 per cent.) is then dropped on to the area and allowed to remain for twenty or twenty-five seconds. The eye is then well washed with sterile water.

Keratomalacia.—PILLAT and KING[18] have endeavoured to determine the source of the pigment found in the conjunctiva in cases of keratomalacia. They quote WRIGHT[19] and KIRKPATRICK as implying that this pigment had an hepatic origin. [The reviewer must have expressed himself badly in the paper referred to since he never held such an opinion.] Tests of the liver efficiency conducted on twelve keratomalacia patients showed no marked degree of impaired liver function; and the authors conclude that the pigmentation in such cases is probably not of biliary origin. The tests employed were laevulose tolerance and the quantitative estimation of bilirubin in the blood serum.

UVEA.—DUGGAN[20] has obtained excellent results from the use of *milk injections* in the treatment of most of the acute inflammations of the eye. He found the treatment especially beneficial in inflammations of the uvea.

LENS.—*Cataract.*—LAW[21] has noted vomiting to occur in 17 patients out of 141 operated on for senile cataract at Moorfields Hospital in five months. The majority of the cases occurred in females. Actual prolapse of the iris was found in 2 cases out of 15 in which vomiting occurred—a proportion of 13·3 per cent. It has been the custom of the hospital to ensure that the patient's stomach is empty at the time of operation, and Law suggests that this may be one of the reasons for the undue frequency of the complication. [It certainly does seem unnecessary and undesirable to insist upon the same routine as for an operation in which a general anaesthetic is administered.] The author has included all instances in which vomiting occurred during the patient's stay in hospital. The iris prolapse rate for the 141 patients was 7·1 per cent.—10 cases.

NANHORYA[22] has analysed one hundred of his cases of cataract extraction. He employed Smith's method, but modified it by forming a conjunctival flap. Vitreous loss occurred in 10 per cent. of the cases, iris prolapse in 1 per cent., and suppuration in 1 per cent.

Luther PETER[23] details the technique which he now employs. He has adopted various modifications as the result of his experience.

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18 PILLAT (Arnold) & KING (Gordon). An Inquiry into the Origin of the Abnormal Pigmentation of the Skin and Conjunctiva in Cases of Keratomalacia in Adults.—*Brit. Jl. Ophthalm.* 1929. Oct. Vol. 13. No. 10. pp. 506–512. With 1 text fig. [10 refs.]

19 WRIGHT (Robert E.). Keratomalacia in Southern India.—*Brit. Jl. Ophthalm.* 1922. Apr. Vol. 6. pp. 164–175. [10 refs.]

20 DUGGAN (J. N.). Milk Therapy in Eye Diseases.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 307–310.

21 LAW (Frank W.). An Enquiry into the Occurrence and Effects of Vomiting after Cataract Extraction.—*Brit. Jl. Ophthalm.* 1929. July. Vol. 13. No. 7. pp. 358–363.

22 NANHORYA (H. B. D.). Analysis of a Hundred Cases of Cataract Extraction at the Raipur Main Hospital by Smith's Method with a Flap of Conjunctiva. —*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. pp. 193–194. With 2 text figs.

23 PETER (Luther C.). Important Phases of a Satisfactory Senile Cataract Extraction.—*Amer. Jl. Ophthalm.* 1929. Sept. Vol. 12. No. 9. pp. 727–730. With 2 text figs.

He uses a motor block combined with a deep injection of 1 to 3 cubic centimetres of a 2 per cent. novocain solution into the region of the ciliary ganglion in all cases except in diabetic patients. He inserts a lid suture near the margin after anaesthesia. This is tied and left in for 4 or 5 days after the operation. He substitutes a retractor held by an assistant for a speculum. He uses a large conjunctival flap and unites this by two lateral sutures after the lens is extracted and the toilet completed. He favours extraction in the capsule effected by a smooth capsule forceps aided by a Smith's hook.

SHASTID[24] thinks that senile cataract may be due to a pressure of the ciliary muscle upon the hard senile lens. The effort to accommodate in presbyopia leads to pressure of the ciliary processes on the lens capsule ; minute traumata of the capsule result and lens degeneration occurs in consequence. In cases of incipient cataract with presbyopia he therefore makes a practice of slightly over-correcting the presbyopia and thus diminishing any tendency to excessive accommodation. For ordinary cases he often prescribes +3·50 D, and states that + 3·25 D. is almost always easily borne. He claims remarkably good results for the treatment.

GLAUCOMA.—COPPINGER[25] has analysed the statistics of the glaucoma patients dealt with at the Calcutta Eye Infirmary during 1927. The total number was 205 ; and no fewer than 62 of these could be attributed to *Epidemic Dropsy*. The most intractable cases were those which had suffered from the dropsy on more than one occasion. It was found advisable to remove dropsy patients from the endemic area as soon as possible after operation. Diastolic blood pressure was found to be remarkably high in all classes of glaucoma other than the inflammatory type. The experience of MUKERJEE[26] in the same epidemic was very similar. He met with 253 cases, 230 being Hindus. Haloes were complained of by almost all the patients. And, though the disease was seldom of an even moderately congestive type, steaminess of the cornea was a very constant sign. A low calcium content of the blood was a feature of the disease, whilst anaemia and a moderate leucopenia with a high proportion of mononuclears were also common characteristics. Early operation (sclero-corneal trephining) was found advisable when the eye disease failed to respond quickly to medicinal local and constitutional treatment. NEWCOMB and VERDON[27] found the intravenous injection of hypertonic sodium chloride solution to be a valuable means of lowering the intra-ocular pressure especially as a preliminary to operation. They are uncertain whether the fall in tension is to be attributed to a change in the osmotic pressure or to an alteration in the constitution of the blood. The average amount injected by them was 20 cc. with a dose of 0·134 gm. of sodium chloride per kilo of body-weight. The injection was preceded and followed by a few cc. of normal saline solution in order to avoid any tissue irritation.

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[24] SHASTID (Thomas Hall). The Treatment of Incipient Cataract.—*Amer. Jl. Ophthalm.* 1929. Aug. Vol. 12. No. 8. pp. 665–666.

[25] COPPINGER (W. V.). Glaucoma as seen at the Calcutta Eye Infirmary 1st November, 1926 to 31st October, 1927.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 267–271.

[26] MUKERJEE (S. K.). Glaucoma as a Result of Epidemic Dropsy.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 272–278.

[27] NEWCOMB (Clive) & VERDON (Philip). Intra-Ocular Tension.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 279–285. [1 ref.]

The experience of ELLETT and RYCHENER[28] does not encourage one to expect to cure chronic glaucoma by using laevo-glaucosan. They found its effect to be only a transient one in those cases in which the tension was at all lowered. It was, however, of service in breaking down iris adhesions in uveitis associated with a high tension, and it occasionally brought about a fall in the intraocular pressure in such conditions. Amino-glaucosan failed in their hands to reduce the tension in acute glaucoma.

WRIGHT and KOMAN NAYAR[29] have also studied the effect of various forms of non-operative treatment, covering 100 cases of primary glaucoma. They regard aminoglaucosan, though inconstant in its action and troublesome to use, as preferable to glaucosan. Yet it seemed less effective than the adrenalin pack. Intravenous injections of hypertonic saline solution were only of service as a preliminary to operation in acute, intractable glaucoma. They conclude that the adrenalin pack may be expected to act as a powerful adjunct to ordinary non-operative treatment, but the efficient instillation of eserine is the best single form of medicinal treatment. Nevertheless, they have discovered no combination of non-surgical methods which will obviate an eventual operation. In the majority of cases they prefer trephining to other surgical procedures. When applying adrenalin pack the eye is first anaesthetized by instillations of 2 per cent. holocaine. Half per cent. eserine is next instilled six times during an hour, and then a small, flattened pledget of wool soaked in 1/1,000 adrenalin solution is placed in the upper fornix for five minutes. Six half-hourly instillations of eserine are made subsequently.

CUÉNOD and ROGER-NATAF[30] have found glaucoma to be extraordinarily prevalent in Tunis. Climate, race predisposition, astigmatism and syphilis all probably play a part in the causation of the disease. The authors, however, consider that trachoma is one of the main causes. Of 521 glaucomatous patients, 25 per cent. suffered from glaucoma secondary to trachomatous leucomata. 75 per cent. of the glaucoma patients were trachomatous subjects. The authors suggest that cicatricial changes at and around the limbus may explain the increased liability to a rise in intraocular pressure.

GENERAL DISEASES.—*Dysentery.*—BHADURI[31] reports two cases of relapsing iridocyclitis in the causation of which the *Entamoeba histolytica* seemed to play an important part. Both cleared up and remained free from relapses once emetine treatment had been instituted. The same author also reports a case of corneal ulcer and a case of paralysis of accommodation. These occurred in dysenteric patients and were favourably affected by the use of emetine.

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28 ELLETT (E. C.) & RYCHENER (R. O.). Some Clinical Observations on Levo-glaucosan (Links-Glaukosan and Amin-Glaucosan.—*Amer. Jl. Ophthalm.* 1929. May. Vol. 12. No. 5. pp. 368–372. [5 refs.]

29 WRIGHT (R. E.) & NAYAR (K. Koman). The Adrenaline Pack in the Treatment of Glaucoma. Its Value in Temporarily reducing the Intraocular Pressure.—*Brit. Med. Jl.* 1929. Sept. 7. pp. 456–457. With 6 charts.

30 CUÉNOD & ROGER-NATAF. Notes sur le glaucome en Tunisie.—*Rev. Prat. Malad. des Pays Chauds.* 1928. Sept. Year 7. Vol. 8. No. 9. pp. 453–455. [6 refs.]

31 BHADURI (B. N.). Ocular Findings in Amoebic Dysentery.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 303–305. [3 refs.]

Kala azar.—MUKERJEE[32] has recorded a case of keratomalacia which he considers to have been due to kala azar. In another case of kala azar a patient suffered from a proptosis with symptoms resembling thrombosis of the cavernous sinus. The author thinks, however, that a haemorrhage had occurred at the apex of the orbit.

Malaria.—VILLARD[33] thinks that the ocular complications of malaria may occasionally escape the notice of practitioners in malarial districts unless they keep a careful watch for them. He furnishes a list of many and various troubles—from conjunctival hyperaemia to optic neuritis. The two most important, however, are undoubtedly dendritic ulcer and the haemorrhages which are sometimes found in cachetic patients.

Undulant Fever.—GODWIN[34] records a case of double optic neuritis in a woman aged 55 who was suffering from undulant fever. He considers that the optic neuritis was due to the specific toxins of the disease.

Leprosy.—KIRWAN[35] found that about 28 per cent. of the inmates of the Calcutta Leper Hospital suffered from eye complications. Ectropion is a common trouble, but, curiously, it seldom affects more than one eye. The upper temporal quadrant of the limbus is the most common site of lepromata, and both eyes often show symmetrical changes. The granuloma infiltrates the cornea in front and the sclera behind and extends round the limbus in a crescentic fashion. Descemet's membrane resists invasion until the process is very advanced. A superficial punctate keratitis is occasionally found, also a deep interstitial form which is due to an iridocyclitis. Inflammations of the iris and ciliary are common complications. KIRWAN thinks that the greyish nodules sometimes seen on the iris are not lepromata. Atrophic areas in the iris are very common. When treating the disease it should be remembered that keratitis is often due to an exposure caused by corneal anaesthesia and orbicular paralysis; proper protection should therefore be afforded. Complete excision of a narrow strip of conjunctiva, including all tissue right down to the sclera ("peridectomy"), is recommended for the leprous corneal infiltration. Subconjunctival medication was found of little use. A broad iridectomy occasionally proved permanently serviceable in cases of posterior synechiae and occlusion of the pupil. CREBBIN[36] was consulted at New Orleans by a patient recently discharged as cured from a leper colony. On examination both pupils were found to be oval. The right iris showed a small greyish-white deposit at the narrowest part of the oval. The left iris presented a typical, fine, white, punctate lepra nodule and some small atrophic areas. When seen again two years later the vision had failed considerably owing to an extension of the cyclitis and to a keratitis in the left eye. Degenerative changes progressed, and, seven years after the first consultation, a cataract extraction was performed, first in one eye and then in the other. Unfortunately the disease progressed

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32 MUKERJEE (S. K.). Ocular Complications of Kala-Azar (Case Notes).—*Calcutta Med. Jl.* 1929. Mar. Vol. 23. No. 9. pp. 527–528.

33 VILLARD (H.). Les complications oculaires du paludisme.—*Rev. Prat. Malad. des Pays Chauds.* 1928. Sept. Year 7. Vol. 8. No. 9. pp. 439–444, 447–450.

34 GODWIN (Dean E.). Optic Neuritis in Malta Fever.—*Amer. Jl. Ophthalm.* 1929. Sept. Vol. 12. No. 9. p. 747.

35 KIRWAN (E. O'G.). The Ocular Complications of Leprosy.—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 289–296. [14 refs.]

36 CREBBIN (Alexander R.). Affections of the Eye in Leprosy.—*Amer. Jl. Ophthalm.* 1929. May. Vol. 12. No. 5. pp. 384–387.

and the patient became quite blind. Nine years after he had been discharged from the Leper Hospital as cured he developed a leprous ulcer on his foot.

MISCELLANEOUS.—A thoughtful and interesting address by WRIGHT[37] draws attention to the importance of ophthalmology in connexion with research work and to the mutual part played by the clinician and the laboratory worker in the investigation of the causes of disease. The paper does not lend itself to abstract and is well worth reading in the original.

GNANADIKAM[38] deplores the overwhelmingly large number of cases of preventable blindness in India. Poverty, procrastination, scarcity of medical aid and illiteracy he considers to be the main causes. He suggests the provision of more rural hospitals and the organization of itinerant hospitals; these latter should be sources of education as well as of treatment.

ANKLESARIA[39] has summarized the current ideas regarding the causation of retinal detachment and has recorded an unusual case which occurred in a myopic lad aged 17. A cure resulted after a treatment which covered a period of six weeks' absolute rest. Injections of hypertonic saline solution were made into Tenon's capsule over the site of the detachment. The strength of the saline was increased gradually from 4 per cent. to 10 per cent. and 10 injections in all were administered.

REPORTS.—In the[40] Annual Report for 1928 of the Madras Government Ophthalmic Hospital WRIGHT devotes a considerable space to a discussion of the cataract work carried on in the institution. Novocaine blocking is now employed in nearly every case. The trunk of the seventh cranial nerve was blocked in some five hundred patients, and the ciliary ganglion in all cases of extraction by Barraquer's method. The conjunctival bridge flap is now much used; but it is considered that the tissues of the South Indian patient are exceptionally prone to bleed and this renders it more difficult to leave a perfectly clear anterior chamber free from all trace of clot than when the corneo-scleral section is employed. A peripheral button-hole iridectomy is the routine measure. 1,841 operations were performed for senile cataract during the year. Vitreous loss occurred in 1·87 per cent.; this is a low rate considering that complicated cataracts and those operated on by surgeons other than the Superintendent and the Assistant Superintendent are included. Regarding trachoma the Report states: "It is considered that numbers of cases which in the ordinary course of practice are diagnosed as trachoma either by the general practitioner or sometimes even the eye specialist, are not so." In an interesting

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37 WRIGHT (R. E.). Ophthalmology in Relation to Research. (Being the Presidential Address to the Medical and Veterinary Research Section of the Sixteenth Indian Science Congress, held at Madras in January, 1929.)—*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. pp. 217–225.

38 GNANADIKAM (G. Joseph). Causes of Blindness. A Statistical Report from the Swedish Mission Hospital, Tirupattur, Ramnad District for a Period of Ten Months (from 1st January to 31st October, 1928).—*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. pp. 194–195.

39 ANKLESARIA (M. D.). Detachment of the Retina. A Complete Cure in a Myopic Case.—*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. pp. 186–190. [6 refs.]

40 MADRAS. Administration Report, Statistics and Professional Rep. of the Govt. Ophthalmic Hospital, Madras, for 1928 [WRIGHT (R. E.)].—56 pp. With 4 figs. on 2 plates & 1 map. 1929. Madras. Govt. Press. [2 rupees.]

section on the causes and prevention of blindness the Superintendent states " the figures show that keratomalacia is a more frequent cause of total blindness in our hospital patients in the first year than ophthalmia neonatorum, although the frequency of attack is far greater in the latter." Keratomalacia, irritant remedies, ophthalmia neonatorum, congenital syphilis, and smallpox appear to be the chief causes of partial or total loss of sight during the first five years of life. "The application of irritant remedies appears to rank as at least the equal of ophthalmia neonatorum as a cause of blindness here and this is certainly insufficiently recognized." Tattooing with gold chloride was found to give a good immediate result, but its effect proved less permanent than Indian ink. The report notes but does not furnish particulars of an investigation of an epidemic of superficial punctate keratitis which occurred during the year. No fewer than 801 patients were treated for this complaint. Many cases of interest are recorded; and the publication is one which should be carefully read by everyone interested in ophthalmology.

H. Kirkpatrick.

Erratum.

T. D. B. Vol. 26. No. 6. p. 504, 2nd line of 4th paragraph (Trachoma). For *China* read *Japan*.

MISCELLANEOUS.

DACO. Le problème de la main-d'oeuvre indigène au Congo Belge. Etude médico sociale. [**The Native Labour Problem in Belgian Congo.**]—*Bruxelles-Méd.* 1929. Mar. 24, 31 & Apr. 7. Vol. 9. Nos. 21, 22 & 23. pp. 597–606; 624–635; 658–665. With 3 text figs. [22 refs.]

The labour problem in Belgian Congo is bound up with that of depopulation which is due to both excess of mortality and an insufficient birth rate. The author's claim to write on this subject is based on 5 years' experience at the gold mines of Kilo.

In the recruitment of labour, camps must be constructed near the recruiting centres. Here the recruits are detained for a month during which various medical examinations are made and infections are treated. The recruits are then conveyed by rapid transport, accompanied by an agent of the medical service, to the place where the labour is required. Here is a stay of three months, with light training under the doctor's supervision. Hence the recruits are drafted to the definitive camps. The camp buildings must be made of material which can be disinfected, with proper latrines and kitchens, and discipline must be strict. Careful attention must be given to the diet. Recruiting, in fact, is regarded as a matter for the direction of doctors. Various indexes of physical fitness are considered; it is concluded that these figures have only a relative importance, and many other things should be considered before the doctor grants a certificate of fitness.

Prophylaxis and care of the workers is discussed at length. The conditions in the definitive camps must be as favourable as those of the recruiting camps. Intestinal parasitic infections are of the first importance. In 1927, of 3,706 labourers in the Kilo mines admitted to hospital for various causes the stools were examined 7,675 times, fresh and diluted or not with normal saline. Of these examinations 5,700, or 74 per cent., were positive. Ascaris eggs were found in 57 per cent., ankylostomes in 15, trichocephalus in 14·5, taenia in 3·3, *Schistosoma mansoni* in 3·2 per cent. Figures are given of association of two or more species of parasites, which was frequent. Ankylostomiasis and ascariasis are then considered in detail. Instances are given of respiratory conditions which were relieved by administration of santonin and the author thinks there is a definite association between these conditions, based of course on the life-history of the worm. Apart from this, however, he does not think that ascariasis is the cause of any marked loss of efficiency.

Similarly, the association of respiratory affections and ankylostomiasis has struck him. Among 65 patients admitted in the Western Division, a forest region where ankylostomiasis is the rule, there were 6 cases of catarrhal bronchitis, 5 of pulmonary tuberculosis, 2 of serous pleurisy, 33 of enlargement of mediastinal glands and 19 of chronic hepatization of the lungs. In the last instance pneumonia develops normally for about a week but resolution does not occur. The cuti-reaction for tuberculosis was negative in all as was also the case in the mediastinal adenopathies. In favourable cases improvement was slow and repatriation was at last necessary; however, some of these natives returned some months later and presented themselves for re-engagement; the lesions of glands and lung had completely disappeared.

In the consideration of prevention the author gives the preference to the smoke latrine, and lays stress on the need for its regular and careful maintenance.

Stress has been laid on the influence of recruiting of labour on the family, and especially on the birth-rate. Men in the prime of life leave their villages and the birth-rate falls. The remedy is to encourage marriages of workmen in their new localities and to provide medical care for the women and children. Of 421 women examined 184 were sick; 16 had active syphilis, 56 cervical laceration, 34 perineal tears, 27 prolapse of uterus, 9 retroversion, and 41 metritis. Syphilis apart, these conditions are nearly all due to child-bearing; the metritis is attributed to gonorrhoea. At an infant welfare centre started at the Kilo mines in 1925, 180 women brought 265 children. The results of the examinations of these children are tabulated at 5 age periods up to 4 years in respect of the general state and morbid conditions. 79 per cent. were below the average and 58 per cent. had some chronic pathological lesion (4 large liver, 69 large spleen, 36 rickets, 13 umbilical hernia, 32 big belly). The conclusions reached were these: The black baby is often very fit at birth and remains so as long as breast feeding is exclusive, but mixed feeding is habitual from between the 6th and 7th month—sweet potato, maize flour, meat—and this causes indigestion and deterioration. The mortality is about 40 per cent., and the deaths usually occur in the first year.

The author studied the weights of 689 babies who were brought more or less regularly during 2 years. They noted that the average weight at birth was superior to that of many European children, and that the weight increased steadily for the first four months; from the 4th to the 8th month it slowed down, being 285 grammes per month against 500 grammes as in Belgian babies. The 8th to the 12th month the monthly increase was 160 grammes as against 250 in Belgium. A curve shows that from the fifth month the weight of the black baby steadily diverges from that of the white and that at the end of the 2nd year the difference is nearly 2 kilos.

In 45 infants the dates of appearance of the teeth were studied. The successive dental eruptions occurred 61 times at the normal date and 61 times after a delay of from 1 to 11 months. The milk teeth were often carious, which the author attributes to want of cleanliness of the mouth and to rickets and hereditary syphilis. He is convinced that the African woman can be educated in the care of her children and thinks that she should be attracted to the centres by suitable rewards.

A. G. B.

BULLETIN OFFICE INTERNATIONAL D'HYGIÈNE PUBLIQUE. 1929. Mar. Vol. 21. No. 3. pp. 430–443. [3 refs.]—Les services de l'Assistance Médicale indigène en Afrique Occidentale Française, d'après les instructions de 1926 et 1927 du Gouverneur Général Carde, relatives à l'orientation et au développement des services de Santé et de l'Assistance. [**Medical Assistance to the Natives of French West Africa.**]

This official brochure is of much interest and importance but contains too much detail for effective summary. The sections are headed: (1) End to be aimed at; (2) General organization; (3) European doctors; (4) Native sanitary personnel; (5) Vital statistics;

(6) Administrative measures; (7) Hygiene of railways; (8) Hygiene of labourers; (9) Co-ordination. It is laid down that it is the aim of the Medical Assistance (*a*) to combat infant mortality by education of the mothers and by progressive penetration of ideas of puericulture among families; (*b*) to combat adult mortality by the detection of social diseases (syphilis, leprosy, tuberculosis) and the application of methods of prevention, and by the recognition of epidemic foci and the prompt undertaking of measures to extinguish them. European doctors must have freedom of movement effectively to supervise the native personnel. It is calculated that 150 doctors are now required in French West Africa, but that in about five years the number should reach 200 and eventually 250.

Under native personnel the midwives are discussed at some length. It is noted that there is a tendency for them to practise their profession in the Maternités instead of going into the villages; here it is that their work should lie and it is essential that they be familiar with the language of the country. Umbilical tetanus should be banished by the same method as in Cochin China (see MONTEL, below).

The form of statistics is laid down. There are to be three tables annually with distinction of sex: I. Living on December 31st, in 4 classes—infants, up to 3 years; children from 3 to 15; adolescents and adults; old people, 50 and upwards. II. Deaths during the year in the same categories. III. Births during the year (stillbirths separate).

Under administrative measures, which include diet, infant hygiene, general hygiene, education, stress is laid on the protection of children against cold. Over large regions children go naked up to puberty and in the cold season the mortality from lung affections is high. The Administration and private initiative must convince the parents of the need of clothing and the latter could distribute small garments.

A. G. B.

TROLLI. Impression sur l'organisation du service médical de l'Angola. [**Notes on the Organization of the Medical Service of Angola.**]—*Bruxelles-Méd.* 1929. Feb. 3. Vol. 9. No. 14. pp. 401–406.

Dr. Trolli, Médecin en chef of Belgian Congo, visited Angola to attend a meeting of doctors of the two colonies at Loanda, held in consequence of the Belgo-Portuguese Convention of July 1927, the objects being to examine the medical position on the frontier and to concert measures of collaboration between the two medical services. On his way back he visited sleeping sickness areas to the north and regained his own colony again near Maquela da Zombo and Thysville. He was especially interested in the organization and working of the medical assistance to natives. In each of certain districts besides the ordinary medical service, personnel is attached specially and exclusively to Native Assistance; the head of this is the chef de zone, a doctor having under him, besides white and black medical personnel, European administrators. The inhabitants of the district are methodically enumerated. As each native is recorded he is medically examined for all diseases as well as sleeping sickness, gland puncture being made if necessary; the infected are treated with atoxyl, yaws patients with stovarsol or bismuth; all are vaccinated against smallpox, wound and ulcers are dressed, and all without exception are atoxylized. Such an examination

is made in principle every 12 or 15 days, fresh natives being added to the roll and new cases treated. The atoxyl treatment consists of 12 one-gram injections, general atoxylization of 6 atoxyl injections and a rest of 4 months, followed by a fresh examination. In fact, the organization is not yet complete and the doses and intervals have to be varied. The atoxylization posts are so sited that no natives have more than one or two hours' journey. For groups of posts a rural hospital-dispensary receives the more serious sleeping sickness cases. A doctor attends at least once a month ; an agent sanitaire is always present.

The author notes that the network of motorable roads is extensive, and that where the Government has not made roads the natives themselves have supplied them to enable medical centres to be formed. He notes also that the natives are subject to strict discipline and that the doctors are clothed with great authority. Every native who without good cause absents himself from the medical visit is liable to a serious fine or some days' work in the construction of dispensaries or in the plantations around them. The fines are levied directly by the doctors, and there is a service of medical police charged with the discovery of delinquents. The discipline extends also to individual Europeans, traders or companies. Their employees must be treated just as the natives in their chiefdoms. If there is no medical service the doctor of the Assistance looks after them and from the employer is recovered a considerable sum proportional to the number of employees. Where there is a doctor, he is under the direct control of the Government doctor under whose directions he works. The head of the Government medical service can even insist on the removal of the private doctor if he considers him unsuitable. Obstructing employers are liable to large fines. The success of this programme depends on attracting a numerous personnel, capable and keen. This object is attained by granting to the personnel of the Native Medical Assistance such "indemnities" that itinerant and laborious service is regarded as a privilege. By this means the doctors are induced to stick to their jobs, and there is, in fact, much enthusiasm for the service. They are not occupied exclusively with sleeping sickness and they have sufficient secretarial assistance. The funds for these payments and the purchase of drugs do not come from the ordinary budget, but from fines, dues paid by companies, fees for treatment by doctors who cannot take fees, gifts, contributions, and from a moiety of the native taxes. Dr. Trolli saw the system at work in several areas, of which he gives details and speaks of it with enthusiasm, though he has to admit that there are difficulties about applying it to Belgian Congo.

A. G. B.

DAMAS MORA (A.). Os serviços de saúde em Angola e a obra da assistência médica aos indígenas. [**Health Services in Angola and the Work of the Native Medical Assistance.**]—*Bol. da Assist. Méd. aos Indigenas.* Loanda. 1928. Sept. Vol. 2. No. 9. pp. 87–94. French summary p. 94.

In 1921 the health service of Angola consisted of 25 doctors and 40 infirmiers ; in 1928 the respective numbers were 73 and 88 European infirmiers, and there were also 7 assistant doctors, 16 private doctors

and more than 100 native infirmiers. Hygiene propaganda in the zones where Native Assistance operates is now possible in the direction of small-pox, trypanosomiasis, venereal diseases. The Native Assistance should be extended all over the colony, but "the budget refuses to march in step with the sanitary provisions." It is suggested that the natives shall contribute the sum required for each district, through the native taxes. The author foresees a time when direct assistance, hospitals and dispensaries will be in charge of municipalities, health measures and prevention in the charge of the State.

A. G. B.

HENRY (E.). Rapport sur le fonctionnement des nourrissons de Léopoldville-Ouest (année 1928). [**Report on the Infant Welfare Centre at Leopoldville-West for 1928.**]—*Ann. Soc. Belge de Méd. Trop.* 1929. June 30. Vol. 9. No. 2. pp. 179–183.

This centre was founded in 1913. In the year under review 82 children were entered, of whom 63 were new-born, and 150 attended the consultations: deaths numbered 11. The chief diseases treated were, in order of prevalence, malaria 187, digestive troubles 83, helminthiasis (hook and round worms) 46, bronchitis 30, penumonia 28. Of the deaths 4 were due to pneumonia and 2 to post-pneumonic meningitis. Of blood films of children 136 were positive with schizonts of "tertian" and 24 with gametes of "tertian"; quartan parasites were seen 5 times and trypanosomes once. In 12 instances the mother's blood was positive for malaria, the child and placenta negative. 67 infants were "premunized" with B.C.G. The B.W. reaction tested in 37 pregnant women was positive 17 times; after treatment there were 3 instances of abortion.

A. G. B.

BOTE (D. J.). El problema sanitario en Fernando Poo. [**Health Problems in Fernando Po.**]—*Medicina Paises Cálidos.* Madrid. 1929. May. Vol. 2. No. 3. pp. 271–273.

Trypanosomiasis has been for some time regarded as the most important of the conditions to be dealt with in Fernando Po, but as a result of the author's investigations it would appear that hookworm infection exists up to 65 per cent. and malaria is rife, and he thinks that these are more important problems calling for immediate action than is sleeping sickness.

H. Harold Scott.

i. VINT (F. W.). **One Year's Post-Mortem Work on Natives of East Africa.**—*Kenya & East African Med. Jl.* 1929. Mar. Vol. 5. No. 12. pp. 383–393.

ii. MACKINNON (M.). **One Year's Post Mortem Work on Natives in East Africa.** [Correspondence.]—*Ibid.* June. Vol. 6. No. 3. pp. 88–89.

i. The author, Assistant Bacteriologist, Kenya, performed 176 autopsies on natives at Nairobi between October 1st, 1927, and

October 1st, 1928. The principal causes of death were as follows :—

Pneumonia	74 cases.
Typhoid	21 ,,
Tuberculosis	16 ,,
Septicaemia other than plague	11 ,,
Plague	9 ,,
Malaria	7 ,,
Dysentery	7 ,,
Heart Diseases	6 ,,
Liver conditions	5 ,,
Scurvy or food deficiency	3 ,,
Nephritis	3 ,,

The diagnosis was confirmed, where necessary, histologically or bacteriologically. In the 74 cases of *pneumonia* the right lung was affected 54 times, the left 12, both 6 times. 64 were over 18 years, the rest under. There were 29 cases of apical infection against 20 of the middle and lower lobes ; the preponderance of apical infection shows that the condition is similar to that which prevails in white children ; the fatality rate is another point of analogy. As to the stage reached, there were 12 cases of acute congestion, 21 of red hepatization, and 40 of grey hepatization. The complications found were pneumococcal meningitis 13, pneumococcal pericarditis 7, both conditions together 3 The proportion of these complications, 23 out of 74, is evidence of the severity of pneumonia among the natives. The pericarditis cases were all associated with a right-sided pneumonia, which the author suggests is due to the fact that the lymph ducts from the heart drain into the right tracheobronchial lymph glands. Figures of seasonal incidence are given but appear to be faulty.

All the 21 cases of *typhoid* showed typical ulceration in the ileum and in nine perforation had occurred. In three of the others there was inflammation of the descending colon with, in one instance, gangrene of the mucous membrane of the sigmoid flexure. Whenever the liver was examined histologically the usual necrotic areas were found. Half of the cases occurred in the quarter October to December, which is the rainy season. In one case with all the appearances of true typhoid no typhoid organisms were found but a bacillus indistinguishable from *Bact. dysenteriae* Shiga, in the ulcers as well as in the inflamed Peyer's patches ; the large intestine showed no inflammation.

The number of cases of *tuberculosis* suggests that this is a common cause of death. The commonest form was acute miliary tuberculosis, with both lungs densely studded. Eight of the sixteen had cavities but in only 2 were they larger than a small bean. A case is given showing the similarity between generalized tuberculous adenitis and Hodgkin's disease.

In *plague* it is common to find a simple picture of septicaemia ; buboes absent, petechial haemorrhages on the heart surface, blood-stained fluid in the pericardial and peritoneal sacs ; the diagnosis depends entirely on the microscope.

As to *dysentery*, in no case was amoebic ulceration of the intestines seen.

The rest of the paper concerns observations made of the organs. In 41 cases there was disease of the intima of the aorta—raised yellowish atheromatous-looking areas, fairly soft and pliable and not ulcerated, varying from pin head points to half-an-inch across, not only in adults but also in youths aged 17. Vegetations were found on the

mitral valve in 9 instances and on the aortic in 6; there were 5 cases of old adherent pericarditis.

A discussion ensues on the size of the liver in natives; in the majority the liver was larger in proportion to the body weight than in Europeans. There was little naked-eye cirrhosis, but of 60 specimens examined by the microscope 20 had an increased amount of periportal fibrous tissue and four a fine cirrhosis. A large liver abscess was found in one instance; scrapings were negative for amoebae and only gram-negative bacilli were found. Fourteen cases of parenchymatous nephritis were seen and two of chronic interstitial nephritis. In 104 cases there was a complete record of the helminths present in the intestine.

Negative		19	cases.
Ascaris lumbricoides	present in	42	,,
Taenia saginata	,,	58	,,
Ancylostoma duodenale	,,	43	,,
Trichuris trichiura	,,	26	,,
Strongyloides	,,	5	,,
S. mansoni	,,	2	,,
E. coli cysts	,,	2	,,
Hymenolepis nana	,,	1	,,

ii. Dr. Mackinnon writes of the "extreme prevalence and high mortality of pneumonia and broncho-pneumonia among all races in Kenya." His experience, at Nairobi, is chiefly among Asiatic children. He feels convinced that the high fatality rate of these diseases is due to faulty nutrition of expectant mothers and young children, and suggests that research on these lines should be carried out in the native Civil Hospital, combined with intensive investigation into the bacteriology.

A. G. B.

WEBB (W. Leslie). **A Note on the Sub-Dispensary System in Uganda.** —*Health & Empire.* 1928. Dec. Vol. 3. No. 4. pp. 289–295.

This "note," by the Deputy Director of Medical Services, Uganda, is an interesting contribution to the problem how to provide medical aid for the native in the vast, sparsely populated areas of Tropical Africa, given the general indifference among the tribes to disease, their initial suspicion of European medical practice and deep-seated objection to spending money on medicine or doctors. In the year 1927 the Medical Department of Uganda spent over £132,000, or 10·25 per cent. of the total revenue. No larger proportion can ever be expected and the question arises how to spend the money so as to afford the greatest relief to the greatest number of sufferers from diseases which are a menace to the general health and at the same time readily respond to treatment.

Excluding epidemic and minor diseases, the maladies most commonly treated in Uganda are syphilis, malaria, conjunctivitis and trachoma, yaws, ulcers, gonorrhoea, helminthiasis, relapsing fever, leprosy and trypanosomiasis, nearly all diseases effectively treated on routine lines by a specific drug.

Obviously it is impracticable to provide European practitioners at an average cost of £900 per annum for the mass of patients affected. Indian assistants cost £300. There remains the African assistant

whose salary varies between 30s. and 120s. a month, or £18 to £72 a year. The question, what service can an assistant render for such a sum, is answered by Dr. Webb thus :—

"He can recognize syphilis and yaws in their various manifestations, treat these conditions by routine courses of injections of salvarsan substitutes, bismuth and mercury, and keep a detailed case record of the condition and of treatment given. He can recognize leprosy and treat it by intravenous or intramuscular injections of 'moogrol' or by the subcutaneous infiltration of 'hydnocreol.' He can recognize gonorrhoea and treat it, not very effectively, it is true, but well enough to afford a certain relief. He can diagnose sleeping sickness clinically and treat it with injections of modern specifics. He can recognize pyrexia, make an intelligent clinical diagnosis of its cause and treat it with stock preparations. He can treat all minor diseases in a routine manner, and carry out the local treatment of such conditions as ulcers or abscesses. He can apply first-aid treatment in the case of accidents, and he can in most cases recognize a serious condition beyond his knowledge as one to be brought to the notice of his medical officer as soon as possible. This is the work being performed to-day by nearly 100 native assistants in Uganda at the salaries mentioned in the previous paragraph. As educational facilities improve there is no reason why native assistants in general should not be taught—as a few have already been taught—to examine blood films and stools microscopically and to undertake routine treatment on the results of their findings."

To the objection that the intravenous administration of synthetic drugs by relatively ignorant natives is dangerous practice the reply is made that no deaths and few disabilities have been recorded and without these services large numbers with syphilis and yaws would have remained untreated.

The author goes on to describe the way in which use is made of the native medical assistant. There are in Uganda about 19 administrative stations where medical units, consisting of a hospital with one or more European M.O.'s, one or more Indian assistants, and native assistants are found and in each district 2–7 sub-dispensaries, each under the charge of a native medical assistant with one or two juniors. They are situated on roads open to motor traffic and the utmost distance from the station hospital is 50 miles. There were 53 sub-dispensaries in action in 1927.

"Each sub-dispensary is built on a one to five acre plot and consists of a three-roomed out-patient department, male and female attendants' quarters and a varying number of outhouses and subsidiary buildings. The buildings vary in construction in different districts, but are usually of a temporary or semi-permanent structure, i.e., with mud and wattle or sun-dried brick walls. An endeavour is made to provide a corrugated iron roof and a cement floor whenever possible. The total cost of such a dispensary is about £300. No provision is made for in-patients, but it has occurred in every case that natives too disabled or disinclined to walk for their daily treatments have built themselves huts on adjoining ground. In one case a village of over sixty huts and nearly 200 inhabitants has been built in this way."

Some of the larger deal with 200 patients daily and the total number of new cases seen in the year exceeded 250,000. "More than half the recorded out-patient work of the Protectorate was undertaken at sub-dispensaries by native medical assistants." Case sheets are kept in the more serious cases or those in which treatment is likely to be prolonged, and the district M.O. pays a visit once a week if possible: patients in need of in-patient treatment can return with him. All

sub-dispensaries must be reachable by car and the district M.O. must be provided with motor transport.

The training of natives as hospital assistants is best undertaken centrally by a specially selected European staff. The initial difficulties are illustrated by the fact that in 1927 79 learners were admitted for training, 30 were dismissed as unsuited and 26 gave up. Without sympathy with natives no medical officer in charge of training will succeed.

In recent years native governments have shown a desire to maintain in part or altogether the sub-dispensaries in their districts and it is likely that eventually the Government will be relieved of their cost. The sub-dispensary accustoms the native to European methods of treatment and has a further value.

"The sub-dispensary serves to-day to a small extent as a centre for the propagation of simple hygienic principles amongst the natives. It could be further developed as a centre for intensive health propaganda, or as a starting-off place in a campiagn against a particular disease, such as syphilis, leprosy or hookworm, or for any other purpose where the goodwill of the native towards an institution he knows is a factor which may be all-important to success."

It is noted that two of the larger missionary societies in Uganda have independently developed much the same system for Maternity and Child Welfare Centres, namely small fixed units under native control.

A. G. B.

LANZONI (A.). Notizie di geografia e nosografia della regione di Ilo-Babur (Abissinia). [**Notes on Ilo-Babur and its Diseases.**]—*Arch. Ital. Sci. Med. Colon.* 1929. Feb. 1. Vol. 10. No. 2. pp. 87–90. English summary p. 91.

The Province of Ilo-Babur is in Western Abyssinia. The capital, Gorè, 2,000 metres above sea-level with a mild climate, is called a veritable paradise. The rainy season is from April to November, during which the fall is heavy, It is a land flowing with coffee and honey. Barley grows well and is made into a fermented drink, and there is much maize. As regards disease, syphilis and gonorrhoea are rife, goitre is very frequent amongst the women of all ages, and pellagra common in those living almost exclusively on maize; elephantiasis of legs and scrotum is common, as is also mossy foot. In Gambella malaria is extensive and is known as Gambella disease. Blackwater fever is met with and one case seen by the author was treated with Calmette's antivenin and rapidly improved [the dose is not stated].

H. Harold Scott.

EPAULARD (A.), HORNUS (P. Ph.) & DELPY (J. J. P.). Notes sur la pathologie Marocaine. [**Notes on the Diseases of Morocco.**]—*Arch. Méd. et Pharm. Milit.* 1929. Mar. Vol. 90. No. 3. pp. 275–361. With 31 charts, 2 coloured plates & 7 figs.

This paper is almost a treatise on the infective diseases of Morocco, from the clinical side. Case records are included.

A. G. B.

SOUTH AFRICA, UNION OF. **Report of the Committee* appointed to inquire into the Training of Natives in Medicine and Public Health. With Appendices.**—36 pp. 1928. Pretoria: Govt. Printing & Stationery Office. [1s. 9d.]

The matters referred to the Committee whose report is under consideration were :—

" (i) The advisability of establishing within the Union a College for the training of Natives in Medicine and Public Health ; and if this principle is accepted :

" (ii) the most suitable place for the establishment of such a college ;

" (iii) the initial cost and the amount of the annual recurrent expenditure;

" (iv) the question of the certification of Natives so trained."

In comparison with the work of Colonial administrations in other parts of Africa little has been done in the Union to organize adequate and efficient medical services among the native population. In most parts of the country the natives have to depend for medical attention upon their own medicine-men except where they have been fortunate enough to be within reach of a missionary doctor. In the Native Reserves there may be one doctor to 40,000 persons. The natives number over 4½ millions, so that one medical man for every 5,000 would mean over 900 doctors. The dangers of the present state are the spread of infectious diseases from areas where they are endemic and deterioration and eventual failure of the labour supply. The remedy, according to the Committee, is the institution of a Government Native Medical Service comprising medical practitioners, nurses and health assistants, all of whom would be full-time servants of the Government. The general plan would be to station a native medical officer at a centre where there is provision for the hospital treatment of natives and put under him one or more health assistants. In the area under his control would be two or more simply-built village nursing stations of 2 or 3 beds, each with a resident native nurse-midwife in charge. The hospitals and medical staffs attached to missions would be incorporated in the scheme. At the outset the majority of doctors would have to be Europeans, as would probably be some of the health assistants ; but natives should be trained for these services, for the number of Europeans at present taking the medical course is insufficient for the needs and is not likely to increase. The advantages of having native medical practitioners to serve the needs of the native population are discussed.

The character of the medical training is then considered and the Committee decided that there should be the same standard for both Europeans and natives, and support this opinion by seven sound reasons, the strongest of which appears to be that the natives themselves demand it.

The question then arose whether natives should be trained in South Africa or elsewhere, and the preponderating weight of opinion was in favour of South Africa. It was calculated that £500 would be more than sufficient for the course at Capetown or Johannesburg, and the recommendation is made that loans should be made available from native funds for this purpose, the Government reserving the right to retain the services of the practitioner where it is considered desirable

* *Chairman* : Dr. C. T. Loram. *Members* : Dr. W. Darley-Hartley, Dr. W. A. Murray, Prof. R. A. Dart, Dr. J. C. Pretorius. *Member and Secretary* : Mr. W. G. R. Murray.

during the repayment of the loan. A proposal to develop a non-European medical school was negatived on the ground of expense. The final recommendation was that following on the completion of a preliminary year at the South African Native College at Fort Hare the training of natives as medical students should be undertaken at Johannesburg as a non-European branch of the medical school of the University of the Witwatersrand. It is suggested that arrangements might be made with various administrations in Central Africa whereby natives might be received from these areas for training as medical men and health officials.

The Committee notes the deplorable lack of native midwives and recommends the offer of bursaries of £25 a year each to hospitals which will undertake to give a year's training in maternity work to a number of approved native women; the instruction should be through the medium of the native tongue. An estimate of the cost of the proposals is appended. Appendix A is Sir Edward THORNTON's account of the Native Medical Services in French West Africa and Appendix D a report of the Lady Coryndon Maternity Training School in Uganda. [This report should be studied by all African administrations dealing as it does with a problem that is urgent throughout that continent.]

A. G. B.

WATT (J. M.). **Native Medical Education and Medical Service to the Natives in the Territories.**—*Jl. Med. Assoc. South Africa.* 1929. May 25. Vol. 3. No. 10. pp. 271–273.

A discussion of the Report of the Committee appointed to enquire into the training of natives of South Africa in medicine and public health, the recommendations of which are in essentials approved.

A. G. B.

MCGUIRE (G.). **Hints on the Village Nurse Scheme.**—*Indian Med. Gaz.* 1929. Feb. Vol. 64. No. 2. pp. 95–99.

The Civil Surgeon of Karnal, Punjab, writes an interesting paper describing how in his district medical aid is brought to the women in the villages who are not reached by rural dispensaries with a male doctor in charge. The field is now occupied by the indigenous dai whose fees for a confinement are 4 annas for a boy and 2 for a girl, for which she has to visit for ten days, and who is notoriously dirty, interfering and incapable. The author aimed at having a nurse or nurse-dai in each dispensary and subscriptions came in so well that now the District Board makes this provision if a subscription of Rs. 1500 has been raised locally. The scheme is to employ the illiterate nurse-dais first, draft them out into the villages with the necessary equipment for normal labour and replace them by a more educated type with a nurse's diploma.

He describes how such a scheme can be brought into existence. The Ludhiana Medical School is the chief training centre, but this and other Christian Hospitals are unable to meet the requirements of the Punjab. Candidates can easily be found and it is suggested that scholarships be provided at the rate of Rs. 30 per mensem for nurse candidates and Rs. 20 for nurse-dais; the former, who must know

some English, should have a four years' training; the latter who can read and write the vernacular or are illiterate obtain a certificate after two years. The indigenous dais should be induced to train for 6 months. At present they are ignorant of cleanliness and the sums they receive are hardly sufficient for existence, much less to provide the patients with necessities. Indigenous dais who are unwilling to train should be brought under control by a monthly payment of Rs. 5 and made to send for the trained dai in every confinement. Unless the country has a sufficiency of trained dais it will be impossible to prevent the untrained from practising their profession. The difficulties to be overcome are stated. Among facilities to be granted to trained nurses are the following: A monthly allowance of Rs. 5 should be paid and private practice debarred. Free medicines, dressings, and diet should be authorized for all poor patients. A female assistant at Rs. 10 should be provided to do dirty work. Husbands of nurses should be provided with posts such as that of schoolmaster in the same village. Post-graduate work should be insisted on. The pay for trained indigenous dais is to be Rs. 25–Rs. 35 per mensem and free quarters. A table is given showing that the scheme is in operation in 23 places in the Karnal district; the number of confinements attended is given in each instance.

[There seem to be three grades in question here—indigenous dais, nurse-dais and trained nurses; their respective duties and emoluments are not always clearly distinguished.]

A. G. B.

Office International d'Hygiène Publique. Comité permanent de l'Office International d'Hygiène Publique: Session Ordinaire d'Octobre 1928. [**Standing Committee of the International Office of Public Health: Ordinary Session October 1928.**]—13 pp.

The Standing Committee of the *Office International* held its ordinary session from October 15th to 24th, 1928. Representatives of 36 countries were present. Various questions raised by the application of the International Sanitary Convention, 1926, came under notice [see *Bulletin of Hygiene*, Vol. 2, pp. 150–1]. A communication from the Sanitary Council of Egypt on the subject of the Hedjaz Pilgrimage has led to the formation of a special Committee of delegates from countries specially interested; this Committee has made recommendations for the control of the pilgrim traffic, with reference to routes, description of ships, health, passports, etc. The Committee will remain in being. Early in 1929 the publication of an *Annuaire sanitaire maritime international*, was to be commenced; it will deal with sanitary organization at the ports. The *Office* has received from the signatory governments a list of ports qualified to effect the deratization of ships and consequently to grant certificates; the list will be published in the forthcoming *Annuaire*. Other points under consideration were bills of health in relation to the consul's visa, artificial lighting for port sanitation, rat-guards on cables, measures against introduction of disease by aeroplane, treatment of seamen for venereal disease, antidiphtheritic serum.

Concerning yellow fever the observation is made that a reappearance in one part of the world is soon followed by others in unconnected parts, e.g., the outbreak at Rio de Janeiro, following on those on the West Coast of Africa. At Rio, it is stated, persons affected were chiefly

newly arrived Portuguese though the absence of yellow fever for 23 years puts out of the question any general acquired immunity of the population. Stress is laid on the importance of detecting the abortive cases (*cas frustes*), which implies compulsory notification of cases of fever, their isolation in a gauze protected room for an observation period of 6 days and, if possible, the inoculation of blood to *M. rhesus*. The *Office* has appointed a Committee to study and correlate the points of view of the different countries concerned.

Cholera in Indo-China and in British India is discussed. In Indo-China in 1928 5,000,000 persons were vaccinated.

Interesting epidemiological details are given of plague. In Madagascar its frequency followed an ascending curve from 1923–4 onwards; in 1927 a drop in the incidence appears to be related to intensive vaccination—277,000 persons vaccinated out of 900,000 in the zone affected.

Remarks are made on post-vaccinal encephalitis and anti-tuberculosis vaccination. From a consideration of the incidence of undulant fever in several countries of Europe it is concluded that the virulence of Bang's bacillus seems to vary with the country, which indicates the need for methodical researches. Other subjects discussed are polyomyelitis, the dengue epidemic in Greece, leprosy with special reference to BARGEHR's lepromine reaction.

A. G. B.

OFFICE INTERNATIONAL D'HYGIÈNE PUBLIQUE. Comité Permanent de l'Office International d'Hygiène Publique: Session Extraordinaire de Mai 1929. [**Standing Committee of the International Office of Public Health: Extraordinary Session May 1929.**]—17 pp. [4 refs.] 1929. Paris: Office Internat. d'Hyg. Pub., 195 Boulevard Saint-Germain.

The account of the spring session, May 13th–22nd, contains much that is of general interest. Space admits only a few extracts from the varied contents. Several questions arising out of the International Sanitary Convention of 1926 were considered, e.g., periodical deratization of ships, certificates of deratization or exemption therefrom. The point emerges that the article here in question was drawn up with a view to a gradual and steady increase of rat-proofing. The employment of wireless telegraphy in case of quarantine measures, the insertion in the International Code of Signals of a medical section dealing with radio-medical consultations at sea, the position of ship's doctors, were discussed; the chief points under consideration in the last case were, the professional education of ship's doctors, their powers in regard to the safeguarding of the public health and their responsibilities. The subject of rat-guards again received attention. It was judged that the sanitary control of aerial navigation should be continuously studied. The subject of passports left over from the report of the Pilgrimage Commission which met at Beyrouth in January was under discussion, especially whether or not there should be a uniform passport.

Coming to diseases, the time has arrived, the Office believes, for a revision of our ideas about smallpox and vaccinia. The persistance in Great Britain and the U.S.A. of an epidemic of mild smallpox of alastrim type and in Far East and North Africa of the classical type raises the question whether in statistics and in the application of

measures of international prevention there should be some distinction in appellation. Other questions, demanding answer, are set out, including that of post-vaccinal encephalitis.

In Indo-China vaccinations against cholera have passed 8,000,000 in 2 years. Their effectiveness has been greater in places where vaccination was almost complete than where it was only partial. Whereas in Tonkin and Annam the evidence is that the disease is water-borne, in Cochin-China it passes direct by contagion.

Vaccination by BCG is dicussed. Attention is drawn to the remarkable variation in the stated mortality of infants living with tuberculous mothers in various European countries, varying from 3 per cent. in Lancashire and Oslo to 25 per cent. in Roumania and Belgium. Till this is explained conclusions as to the efficacity of the vaccine are premature. Bargehr's reaction in leprosy is again discussed and dengue. Of undulant fever it is noted that in a district of Sweden epizootic abortion was found in 78 per cent. of farms situated near rivers or lakes, but that 85 per cent. of farms distant from water were free. [No conclusion is drawn from this statement.]

As bearing on the suggestion that general paralysis occurs in persons who have been inefficiently treated for syphilis it is stated that a Russian and German Commission examined 4,000 persons in the region of Lake Baikal, who had received no treatment, and found that tabes and general paralysis were not rare.

A. G. B.

CHRISTOPHERSON (J. B.). **A National Outlook on Tropical Medicine. President's Address.**—*Proc. Roy. Soc. Med.* 1928. Dec. Vol. 22. No. 2. pp. 115–120 (Sect. Trop. Dis. & Parasit. pp. 1–6). [1 ref.]

Speaking of parasitic disease Dr. Christopherson lays down that the primary attack should be on the parasite in the human being: the aim should be adequate disinfection of the patient to prevent infection of the intermediate host. He applies this to malaria, ankylostomiasis, bilharziasis, leprosy. The "indirect principles of medicine" [which seems here to mean sanitary and hygienic measures] are not easily applied in the tropics, "Natives inhabiting tropical countries take medicines very well, but they take hygiene very badly." He illustrates his thesis by bilharziasis in Egypt. KHALIL estimates that half-a million persons present themselves annually for treatment. The fellah has no objection to intravenous injection. Antimony tartrate is cheap and cures 100 per cent. If treatment were brought to the villages by mobile hospitals it would be possible to treat a million persons a year, a substantial step towards eliminating bilharzia from Egypt. He goes on to consider the effect of widespread endemic infection on the moral and material condition of a community, with Egypt again as the text. The great majority of the Egyptians, 14,000,000 in number, are agriculturists, most of them embarrassed by disease. The four serious diseases, endemic from ancient times, are bilharziasis, ankylostomiasis, pellagra and ophthalmia. MACCALLAN estimated that 75 per cent. have granular lids; over half-a-million were blind in one or both eyes. Pellagra fills Egypt's two asylums. 75 per cent. suffer from bilharzia infection, in some districts 94 per cent. Ankylostomiasis is the cause of one-fourth the total deaths; this and bilharziasis account for a third of the deaths. It is a fair statement, Christopherson thinks, that these diseases affect the intellectual capacity as they affect the

physical. [There does not seem to be much evidence for this but] it is stated that since all newly enlisted soldiers have been treated for ankylostome and bilharzia infections the efficiency of the army "has thereby been very effectively increased." He suggests that when the diseases oppressing them have been banished the fellahin will respond to education, cease to be "2,000 years behind the times," and enter on a new era of prosperity. [Dr. Christopherson is a protagonist of the doctrine of treatment of the human patient, but he himself writes: "Constant re-infection, to which Egyptians who live in endemic districts are exposed, renders ankylostomiasis especially deadly.]

A. G. B.

CONNOR (Frank Powell). **The Surgical Aspects of Tropical Diseases. With Some Remarks on the Conditions under which Surgery is Practised in the Tropics.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Nov. 25. Vol. 22. No. 3. pp. 219–238.

An instructive paper in which Sir Frank Connor maintains that the need for the surgeon as distinguished from the general practitioner in the tropics is a very real one, and points out that in the past the surgical aspects of tropical diseases have been little realized and less written upon. Much surgical work has been done, but the multifarious duties of the workers, and lack of co-ordination, have prevented the compilation of thoughtful records and the passing on of the special knowledge gained. Overworked, and with little leisure for thought and study, the surgeon in the tropics, considering his opportunities, has done but little to advance the science and art of surgery. As outstanding examples, however, of noteworthy achievement, KEEGAN'S improved operation of rhinoplasty, the same surgeon's work in litholapaxy, Henry SMITH'S intracapsular operation for cataract, ELLIOT'S work in connection with the treatment of glaucoma, and FREYER'S operation of prostatectomy are mentioned. His own experiences as a consulting surgeon in Mesopotamia during the war, and the opportunities there provided, lead the author to define tropical surgery as embracing all that is usually understood by surgery *plus* "a study of the surgical diseases, complications, and local conditions peculiar to the tropics." He adds that intermingling of diseases consequent upon more rapid human interchange between tropical and temperate climates will in the near future necessitate a more general knowledge of tropical medicine and surgery.

The subject matter of the paper is considered under several heads. Quotation or comment is restricted to a few of the many points of special interest dealt with.

As a climatic consideration of importance it is recognized that heat is a difficult factor to contend against, harmful to the patient and demoralizing to the surgeon. When the atmospheric temperature is very high a careful watch must be kept in surgical wards for the appearance, often very sudden, of symptoms of heat-stroke. Operative surgery can be practised successfully, if ordinary precautions are adopted, in a tent or temporary hut, but it is satisfactory to learn that the long-neglected question of the cooling of rooms and houses is at last receiving attention.

In discussing rat-bite fever it is laid down that rat-bites should always be excised or thoroughly cauterized. In one curious case seen by the

author the exact site of a rat-bite scar on the little toe developed a melanotic sarcoma within five months.

In countries where plague is endemic or liable to appear in epidemic form the surgeon must always be alive to the possibility of encountering cases of aberrant type. Interesting instances are given.

Schistosomiasis is cited as an example of the extraordinarily unequal distribution of tropical diseases, being unknown at the present time in India owing to the absence of fresh-water snails of the genus *Bullinus* though fossil remains of this snail are found.

From a surgical point of view *Filaria bancrofti* is the most important of the parasitic worms infesting the human body, and the author is of opinion that in some heavily infected localities it provides the surgeon with nearly half his operative work. We have as yet no specific remedy for this worm, and are still very ignorant of some phases of its life history in the human tissues, as well as of many of the details of its pathological manifestations.

Some curious cases are quoted from the author's own experience relating to the surgical depredations of intestinal worms.

In his concluding remarks Sir Frank Connor points out that every aspect of surgery is modified to some extent by tropical conditions varying with climate and locality, conditions of life, racial peculiarities, and other known and unknown factors.

J. J. Pratt.

LE ROY DES BARRES (A.). La chirurgie en Indochine et en particulier au Tonkin. [**Surgery in Indo-China and especially Tongking.**]—*Rev. Méd. et Hyg. Trop.* 1928. Nov.–Dec. Vol. 20. No. 6. pp. 161–178. [13 refs.]

In a paper of considerable length the author treats of surgery, surgical results, and surgical difficulties in the tropics, with special reference to Tongking and Indo-China. Speaking generally, he finds that results are much the same as in temperate climates when operations are performed with all needful precautions in suitable surroundings, by surgeons provided with full necessary equipment and assisted by a trained staff. In the bush, on the other hand, where these conditions cannot obtain, the result depends largely upon chance and the resistance of the subject. The surgeon practising in Indo-China having acquired knowledge of climate, of environment, and of the people with whom he is called upon to deal, learns that the first, by its warm humidity, necessitates special precautions in sterilization, in the care and storing of instruments and dressings, and in the choice of anaesthetics It moreover lowers his own powers of resistance and produces a liability to cutaneous affections which may at times prevent him from undertaking operations. Skin diseases of every variety are of course extremely common among the natives. The bites of wild and venomous animals produce injuries of a special nature. Tetanus and gangrene are constantly encountered. Malaria, intestinal infections, and untreated syphilis have always to be reckoned with. The multiplicity and variety of insects with their pathogenic capabilities, myiasis, racial and family habits and superstitious ignorance, aversion to surgical intervention, are some of the factors requiring recognition in the surgeon's relations with Annamites. To these may be added beriberi and malnutrition, sometimes bordering on starvation. There is no alcoholism amongst the indigenes, but the

opium habit is widespread. Amongst the Europeans it is by no means rare to find a moderate opium smoker, and though actual drunkenness is uncommon, some degree of over-indulgence in alcohol is frequent. The surgeon often carries on his work with an insufficiency of instruments and appliances, and without the support of the radiologist, bacteriologist, and pathologist whose assistance in more civilized surroundings would be considered indispensable. The idea seems to prevail among European residents, perhaps climate-wearied and debilitated by paludism, dysentery or helminthiasis that surgical intervention on the spot (at any rate outside the capital) should be restricted to cases of urgency, and this view is shared by some of the medical men. The writer is not at present in favour of multiplying surgical centres in Indo-China, but considers it essential that those already existing should be better equipped both in material and personnel.

M. Roy des Barres gives much sound advice with regard to operating rooms and sick wards; the preparation of patients (including the opium addict) for operation; the choice, care, and application of dressings; and the preservation of instruments. As a general anaesthetic he prefers ether to chloroform or chloride of ethyl. He finds that chloroform does not keep well, and is ill tolerated by Europeans often with liver and kidneys not functioning satisfactorily. With natives, for operations below the umbilicus he employs spinal anaesthesia (syncaine or stovaine), but notes with regret that this method is not in favour with the white man. Local or regional anaesthesia is resorted to whenever possible.

Dressings should not be voluminous and must be changed oftener than in temperate climates. In the post-operative period a careful watch must be kept upon native patients and their companions, owing to their ignorance and indocility in the matter of diet, and to the curiosity which induces them to meddle with the coverings of wounds.

J. J. Pratt.

MANUWA (S. L. A.). **Hernia in the West African Negro. An Analysis of One Hundred Consecutive Cases operated on in Calabar African Hospital.**—*West African Med. Jl.* 1929. Jan. Vol. 2. No. 3. pp. 156–161. [6 refs.]

In West Africa such abdominal operations as are performed are usually infra-umbilical and of these herniotomy is much the most common, the hundred cases reported in this paper representing 88·9 per cent. of all abdominal and 45·7 per cent. of all major operations in a year. Seven of the patients were females and 93 males. 80 per cent. of the total were between the ages of 21 and 40. The most common predisposing factor was increased intra-abdominal pressure resulting from the straining attendant on chronic constipation and gonorrhoeal stricture. In 63 cases signs of chronic gonorrhoea were noted, and in 12 of these almost complete stricture, necessitating dilatation or urethrotomy, was present.

Ninety-six of the hernias were inguinal, one femoral, and three umbilical; of the last-mentioned two occurred in children and were of neo-natal origin, while in the third the subject was an obese multiparous female. Of the inguinal cases eight were enormous scrotal hernias extending down to the knees or further, one was associated with a large elephantiasis of the scrotum, and in eleven the bladder

formed either the whole or part of the contents of the sac. The diagnostic features of hernia of the bladder are detailed.

Five cases in all were strangulated, four inguinal and one umbilical. Two of the former were Richter's hernias (in which complete obstruction and faecal vomiting do not occur).

Pre-operative treatment consisted in dealing with any gonorrhoeal and luetic infection, and in clearing the intestine of helminths with chenopodium. Quinine grains 5 twice daily was given to all patients. Large scrotal hernia patients received a preliminary course of digatilis, haematinic, and anti-specific remedies. Bladder cases were irrigated with acriflavine lotion (1 in 4,000) and put on a hexamine mixture.

The routine anaesthetic in simple cases was the gas-oxygen-ether mixture given by Boyle's apparatus. Spinal anaesthesia was found unsatisfactory and relatively slow.

The usual operation practised was one in which, unlike Bassini's method, the internal oblique and the conjoined tendon were stitched over the cord to the abdominal surface of the inguinal ligament by stout interrupted catgut. In the large scrotal hernias it was sometimes found necessary, by reason of the bulk of the contents of the sac and adhesions, to adopt special methods, which are described.

In hernias of the bladder the best line of approach was found to be from the upper antero-lateral surface just below the internal ring. Partial cystectomy was the routine procedure in all cases in which more than one-third of the bladder protruded.

Post-operative complications were rare in the simple cases, but in one of the large scrotal hernias paralytic ileus, with pre-existing myocarditis, resulted in death; another, with pus in the scrotum, developed diarrhoea and died suddenly ten days after operation; a third case succumbed to amoebic dysentery after four weeks; a fourth, suffering from syphilitic aortitis and myocarditis, survived for ten days only; while a fifth with mitral incompetence and other troubles, died after five weeks, the wound having in the meantime soundly healed. In addition to these, three of the five strangulated cases ended fatally; in one of them the condition had been converted into that of faecal fistula five days before the operation by a "medicine man," who had thrust a knife into the swelling. It is noted that a red-hot poker has been known to be used for the same purpose.

Excluding the fatal strangulated cases and those of inter-current disease, the mortality was 2 per cent. No instance of recurrence of the hernia has yet come to notice.

J. J. Pratt.

BARNARDO (F. A. F.). **The Importance of the Recognition of Mixed, Multiple and Secondary Infections in the Treatment of Tropical Diseases.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 1–6.

In the course of two years at the Medical College, Calcutta, 250 cases have been analysed by means of laboratory diagnosis, thus :—

A.	Simple Infections	40
B.	1. Mixed Infections	22
	2. Multiple Infections	88
	3. Secondary Infections	100

B.1. Mixed infections. One organism enables another to gain a foothold, i.e., to become pathogenic. Instances given are the sudden

virulence of cholera, the inability of the tetanus bacillus to proliferate in the tissues without a friendly coadjutor.

B.2. Multiple Infection. Two infective agents are at work independently, e.g., typhoid with malaria, typhoid with ankylostomes or round worms. Attention is drawn here to the virulence of the streptococci in the tropics and their frequent presence in the blood stream in cases of simple fever.

B.3. Secondary Infections. One infection supervenes on another when resistance has been lowered, e.g., kala azar followed by typhoid and *vice versa*; typhoid followed by streptococcal infection; tuberculosis and malaria; dysentery and general streptococcus infection.

Doubtful cases are then discussed. One factor may be latent or dormant, e.g., colon bacilli in the urine and harmless, plasmodia in the blood but at the time non-pathogenic. In other instances there is antagonism, e.g., malaria and G.P.I.

"It will be remembered that few tropical diseases can cause symptoms and a clinical picture sufficiently pathognomonic to be definitely recognized without the aid of the laboratory, and the closest co-operation of the clinician and pathologist is the only method of safety. On the whole, I am inclined to accept, as a factor, no finding of the laboratory, if it appears that the organism discovered is not likely to have contributed to a part of the clinical picture."

[A contribution to an important and little studied subject.]

A. G. B.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE. 1929. Apr. Vol. 22. No. 6. pp. 819–831 (Sect. of Trop. Dis. & Parasit. pp. 23–35). —**Discussion on Monkeys and Human Disease** [POCOCK (R. I.), LOVELL (R.), HINDLE (Edward), THOMSON (J. G.), CAMERON (T. W. M.), WIGGLESWORTH (V. B.), HAMERTON (A. E.)].

In this discussion on the relationship of man and the lower primates, from the medical point of view, Pocock considered the zoological relationships of man, apes and monkeys and concluded that the common ancestor of man and the apes was a mainly terrestrial biped and that, whereas the apes readopted more or less arboreal habits—possibly as a result of human competition, man himself progressed along the line of perfecting terrestrial locomotion in the erect bipedal manner. Lovell discussed the bacterial diseases of apes and monkeys in captivity including streptococcal infections of the lungs. From the digestive tract, where they have been the cause of disease, have been recovered *Bact. aertrycke*, *Bact. morgani*, and other organisms related to the dysentery group of bacilli. Monkeys, he pointed out, are susceptible to both mammalian strains of tubercle bacilli. Experimentally they have shown themselves to be susceptible to *Br. melitensis*, *Str. pneumoniae*, meningococcus and various other organisms pathogenic to man. Hindle, considering the filterable viruses, stated that in the wild state rabies was the only disease in this group contracted by monkeys, although he directs attention to BALFOUR'S belief that monkeys might also suffer from yellow fever. As experimental animals, they have proved invaluable in investigations on yellow fever, poliomyelitis and measles; they are the only known alternative hosts to man in the first two of these at least. Thomson showed that virtually all the human protozoa were found in the lower primates but further

work was necessary before all the parasites could be considered specifically identical. Cameron in discussing the helminth parasites, pointed out that *S. mansoni* was the only important human parasite known to be harboured by monkeys, although probably *S. haematobium* would ultimately have to be added to the list. Other parasites common to both, were either unimportant clinically or of merely local importance. The Oxyurids of man and monkeys presented an interesting evolutionary problem. Wigglesworth drew attention to the phylogenetic relationship of the lice in the primates and Hamerton demonstrated a series of specimens illustrating the morbid anatomy of monkeys.

The discussion while emphasizing the importance of monkeys as essential experimental animals showed that—with the exception of the schistosomes and possibly of yellow fever—their effect on human health in the tropics was negligible.

T. W. M. Cameron.

LOWMAN (K. E.). **Health Conditions in St. Croix.**—*Milit. Surgeon.* 1929. Apr. Vol. 64. No. 4. pp. 539–543. With 2 text figs.

This island of 84 sq. miles, sometimes known as Santa Cruz, one of the Virgin Islands lying off Porto Rico, was acquired by the U.S.A. in 1917. It is volcanic and the chief industries are sugar growing and cattle raising for the Porto Rico market. There are 11,118 inhabitants, of whom 500–600 are recent arrivals from Porto Rico. The leper asylum has 84 inmates, most of whom come from other West Indian Islands. At the insane asylum two cases of pellagra are noted. Steps have been taken to control the spread of hookworm from the Porto Ricans to the Santa Cruzians. All positive for hookworm ova have been or are being treated and adequate privies have been constructed for the immigrants. Estate owners have been recommended to instal these necessities in all villages. A mosquito survey has shown the prevalence of *Anopheles albimanus*; it is noted that while the Island is "practically malaria free" the Porto Ricans are in many cases infected. *Culex fatigans* and *Aedes aegypti* breed all over the island, especially near human habitations. Measures have been taken to control all mosquito-borne diseases. Surgical operations at the two hospitals in the last year included "a great number of tonsillectomies."

[A paper on the Virgin Islands was summarized in this *Bulletin*, Vol. 11, p. 217. It is there noted that hookworm infection is found in St. Croix, but is not widespread. Filariasis was estimated at 25 per cent. or more; pellagra as quite common. Water supply is described as a "knotty problem."]

A. G. B.

HIGGINS (M. E.). **Health Conditions in the Gendarmerie d'Haiti.**—*U.S. Nav. Med. Bull.* 1928. Oct. Vol. 26. No. 4. pp. 889–893. [2 refs.]

The Haiti gendarmerie is a military police force of 2,500 enlisted men, all of pure African blood, distributed in 140 stations and outposts all over the Republic. The death rates, given for each year from 1923 to 1927, are about three times those of the U.S. Navy, and admission rates about one and a half times as large. These excesses are due to tuberculosis, malaria, and V.D. Of 25 deaths in 1927 11 were due to

tuberculosis, 4 to pneumonia and 4 to heart disease. The necropsy records at the Haitian general hospital Port au Prince, show that one-third of all deaths in that institution are due to tuberculosis; facilities for segregation of cases and early diagnosis are only now available. The inadequacy of the diet in protein and fat is believed to account for the susceptibility of the Haitian to both pneumonia and tuberculosis. As a cause of morbidity in the gendarmerie V.D. head the list, 776 admissions in 1926. Kahn and Wassermann surveys have shown that 62 per cent. are positive; yaws is very common in the rural clinics. Malaria too is common, but no deaths were reported. Infestation with intestinal parasites is usual but is of minor importance; hookworm disease is not a public health problem of any magnitude. The past decade has been one of great progress.

"The National Public Health Service has established 10 hospitals and is operating over 100 dispensaries and clinics, covering the entire Republic. Treponemicidal drugs are being administered at the rate of one-half million doses per year and thousands of cases of malaria are receiving treatment by quinine. The National Agricultural Service, through numerous rural schools, is decreasing illiteracy and increasing the productive capacity of the peasant by the introduction of improved farming methods."

A. G. B.

RISQUEZ (F. A.). La morbosidad en Venezuela. [**Prevailing Diseases in Venezuela.**]—*Cronica Med.-Quirurg. de la Habana.* 1929. Apr. Vol. 55. No. 4. pp. 196–205.

The chief diseases are malaria, parasitism, and tuberculosis in that order; the general mortality rate for the Republic is 23 per thousand, but it varies greatly in different districts. Thus, in the capital, Caracas, at 1,000 metres with a mean annual temperature of 20° C., a progressive population, and no malaria, the figure is 25. The malaria death-rate is 3–4 per thousand, but 20 to 70 per cent. of the inhabitants in certain areas show blood infection. Of parasitic conditions hookworm is the most common. Other fevers include chiefly typhoid, sometimes in association with malaria and yellow fever. Paratyphosus infection is common, and a condition denominated "pseudotyphosus," which is *Bact. coli* septicaemia. Yellow fever is endemic in Maracaibo where it is called "acclimatization fever." Typhus and relapsing fever also occur. Tuberculosis accounts for between 3,000 and 4,000 deaths annually, and among those registered as dying from bronchopneumonia and bronchitis are undoubtedly many cases of tuberculosis.

H. Harold Scott.

COLLIER (W. A.). Durch Protozoen verursachte Krankheiten im Llanosgebiet Venezuelas. [**Protozoal Diseases in the Llanos Region of Venezuela.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Oct. Vol. 32. No. 10. pp. 489–494. [1 ref.]

The diseases met with on the Orinoco plains about which the author writes [with some latitude as regards his title] are malaria, amoebic and balantidial dysentery, tropical ulcer, dengue, Weil's disease and yellow fever.

Antimosquito measures against malaria are impracticable because for part of the year the plains are a sheet of water; mosquito nets are little

used. Amoebiasis is much rarer in the plains than elsewhere, which the author attributes to the scarcity of flies, itself unexplained. Yellow fever has disappeared but since *A. egypti* is ubiquitous it may return.

A. G. B.

UNITED FRUIT COMPANY, BOSTON, MASS. SEVENTEENTH ANNUAL REPORT. MEDICAL DEPARTMENT. 1928. pp. 25–33. **Comments on Some of the more Important Diseases occurring in the Tropical Divisions.**

In the plantations of the United Fruit Company [as elsewhere in the tropics] while malaria is the chief cause of morbidity, lobar pneumonia provides most fatalities. In 1928 of 368 cases hospitalized 138, or 37·5 per cent. died, a higher percentage than in the two years previous. The incidence and mortality rates are affected by: (1) Race. Native Indian, negro and mixed races are more susceptible than whites. (2) Labour turnover. In some divisions this is high; hence low individual earning capacity, inadequate food and clothing, and lowered resistance to infection. (3) Intercurrent diseases: malaria, hookworm, syphilis, malnutrition cause anaemia with again lowered resistance. (4) Influenza. No specific drugs or measures have given better results than those formerly employed. Early digitalization by heroic doses is recommended.

Epidemics of influenza occurred in 1928; 1,755 cases were treated with 11 deaths.

Of typhoid there were 78 cases treated in hospital with 12 deaths. In no case was the origin traced to water, milk or other food supply. Of 39 cases investigated in the Banes Division in 38 instances the origin was traced to flies or direct contact, in the remaining one to a recently infected well. Measures advised are education, prophylactic inoculations and case isolation. In 1928 8,000 injections of typhoid vaccine were given to contacts.

Of amoebic dysentery 331 cases were treated with 3 deaths; this, a lowered incidence, is attributable to the improved water supply in the Colombia Division. The bismuth-subnitrate treatment, even when uncombined with emetine, is so effective that details are given:—

"The patients were confined to bed, placed on a varied liquid diet (excluding eggs), and bismuth subnitrate was given in doses of from 1 to 2 teaspoonfuls in bulk, stirred in a tumbler of plain water, or—better still—effervescent water, 3 or 4 times daily. This treatment was continued until the stools formed and were lessened in number to 3 or 4 daily, whereupon a more generous diet was allowed. As the patient convalesced, the dosages of bismuth were reduced in number to 2 or 3 daily. If constipation developed and no movement occurred for 2 days, castor oil was administered. Generally, within from 3 to 4 weeks the patients were convalescent, and relapses were of rare occurrence . . . Within 24 hours after administration the character and the flora of the stools changed, and improvement in the patient's condition soon became evident. Amoebae were rarely found after the 4th day."

Nowadays emetine is given hypodermically as well, 1–2 grains daily, not more than 9 grains to a course, repeated only after an interval of several days. E.B.I., yatren and stovarsol have been tried but "none has produced the universally good results obtained from bismuth subnitrate and emetine." Eighty-two cases of bacillary dysentery, of various forms, were treated with 8 deaths.

The incidence of beriberi is increasing; 42 cases. In the classes of people affected there is an excess consumption of refined cereal food and inadequate intake of unrefined foods, as legumes, vegetables and fresh fruit.

Incidence of hookworm infection is high but degree of infestation low. All hospital patients are examined for hookworm and if ova are found, treated. Oil of chenopodium is the vermifuge of choice.

Of diphtheria 17 cases were reported with 2 deaths; it rarely assumes epidemic proportions in the American tropics and seldom proves fatal. A number of persons exposed have positive throat cultures but few become ill.

Of pulmonary tuberculosis 228 cases were treated with 36 deaths. Other topics discussed are erysipelas, venereal diseases and dhobie-itch ointment.

A. G. B.

FLU (P. C.). Verslag van een studiereis naar Suriname (Nederlandsch Guyana) Sept. 1927–Dec. 1927, en beschouwingen dienaangaande. **(Report on Investigations in Surinam (South America), September 1927-December 1927.)**—*Acta Leidensia (Scholae Med. Tropicae).* 1928. Vol. 3. pp. 1–188. With 61 figs. English summary pp. 189–192.

This is a long Dutch paper freely furnished with good photographs and having an English summary of three pages appended. Here is the summary summarized. The author was born in the Colony and has worked as head of a laboratory at Paramaribo. On this visit he found the public health conditions at the capital improved but water for domestic purposes is stored in "zinc wells" which may breed culex and favour the spread of filariasis (*F. bancrofti*). In 1909–10 he made an extensive examination of the inhabitants of Paramaribo for filarial infection. The actual figures are not given but:

"1·2 per cent. of the whites
25 per cent. of the Israelites
23 per cent. of the socially privileged creols
50 per cent. of the men } of the remaining less privileged
60 per cent. of the women } inhabitants
were infected with the larvae of Filaria bancrofti."

Elephantiasis, lymphomata, erysipelatoid inflammation, lymph varices occurred frequently. In 1927 in an examination of 638 culex he found larvae in the muscles or proboscis of 172 or 27 per cent., whereas in 215 stegomyia the number infected was 18 or 8·3 per cent. The author explains this difference by the fact that stegomyia for the first few days after eclosion flies by day, whereas culex from the first is nocturnal; hence culex runs a greater chance of becoming infested by embryoes which are found in the peripheral circulation at night. He examined 51 families with 224 persons, living in streets where the mosquitoes were highly infected; of the 51 families 35 were infected; of the 224 individuals 58.

Formerly cases of primary malaria in Paramaribo were very rare. Rice cultivation has now been started round the town. *A. tarsimaculata* breeds there and malaria is frequently found in the outer parts. Other diseases found are leprosy (widespread), enteric, amoebic dysentery (rare), bacillary dysentery (small epidemics). The most important diseases among coolies are ankylostomiasis, malaria, ulcus cruris and venereal disease.

A. G. B.

SCHÜFFNER (W.) & SNYDERS (E. P.). Vorwiegend in den Tropen vorkommende Darm- und Blutkrankheiten. [**Intestinal and Blood Diseases which occur Especially in the Tropics.**]—Reprinted from *Verhandlungen d. Gesellsch. f. Verdauungs- u. Stoffwechselkrankh. VIII. Tagung. Amsterdam. 1928, Sept. 12–14.* pp. 135–145. (Leipzig : G. Thieme, Verlag. 1929).

The authors give a list of diseases which have hitherto spared the Dutch East Indies—trypanosomiasis, leishmaniasis, yellow fever, relapsing fever, typhus, Oroya fever, undulant fever, scarlet fever, schistosomiasis. Eighteen years ago plague might have been added, but at that time it effected an entry into Java and there it remains. A malignant form of scarlet fever lately broke out on a Dutch steamer during its voyage through the tropical zone.

The authors proceed to discuss the diseases found in that part of the world and especially ankylostomiasis and sprue.

A. G. B.

SPARMANN (Richard). Als Arzt in Holländisch-Ostindien. [**Experiences of a Physician in the Dutch East-Indies.**]—*Wien. Klin. Woch.* 1929. May 9. Vol. 42. No. 19. pp. 652–658.

The author is an Austrian surgeon who recounts his experiences after seven years in Java and in northern Sumatra. After a description of the country and the medical and sanitary provision for the numerous coolies he comes to his own observations which are of general interest but contain little that is not familiar to readers of this *Bulletin.* He says emetine in Java has not proved to be the preventive of liver abscess that was expected. He operated on 47 cases of an average content of 5–7 litres of pus [but does not say whether these patients ever received emetine.] He notes that cases of chronic relapsing amoebic dysentery are often relieved of symptoms by removal of the appendix. Illustrating the size of some of the tumours met with he removed a dermoid cyst of the ovary containing 61 litres of fluid. The woman who was parted from it weighed 34 kgm. and returning to her village was nearly excluded as a stranger. He notes the very frequent occurrence of urethral stricture as a result of gonorrhoea and that of rectal stricture after infection with " Bacillus unae."

A. G. B.

KOUWENAAR (W.). De organisatie van den medischen en hygienischen dienst in het cultuurgebied der Oostkust van Sumatra. [**The Organization of the Medical and Hygiene Service in the Agricultural Districts of the East Coast of Sumatra.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. June 10. Vol. 69. No. 6. pp. 591–603. [2 refs.]

The ' Coolie Regulation ' obliges the agricultural companies on the East Coast of Sumatra to provide their indentured native labourers and their families with medical treatment and attendance. This obligation was taken broad mindedly by the companies in their own as well as in the labourers' interest. The native's fear of European medicine and hospital attendance has since long been practically overcome, but the coolie regulation still provides the European employer with a wholesome advantage in this respect.

Centralization of the hospital service has been a very important factor in bringing this up to a high level of efficiency. The hospitals are generally built for about 5 per cent. of the labour forces, i.e., about 2·5 per cent. of the total population of the estates. The normal percentage of absenteeism on account of illness of the labourers is about 2. A sequel of the centralization of the hospital service is the fact that 70–80 per cent. of the patients in hospital suffer from light diseases only. The accommodation for more serious cases may be comparatively limited.

The medical service on the E.C. of Sumatra aims in the first place, at the combating of disease and prophylaxis. The hospital constitutes the centre of the service. Generally one doctor can take care of 6.000–8,000 labourers and their families, with the aid of European assistants and native staff. At present, there are 40 hospitals with 44 doctors. They offer accommodation to 14,250 patients.

Founded by a few of the most important tobacco companies and later kept up by subscriptions of practically all the companies and the government, the Pathological Laboratory at Medan performs all kinds of pathological research, advisory work, preparation of sera and vaccines, etc.

The hygienic care of the estates is very important. Medical inspection of the labour force is held once or twice a year, local inspections sometimes more frequently in view of local epidemics (hookworm disease, malaria, etc.). The inspections are often combined with mass cures (hookworm disease) or vaccinations (smallpox, typhoid). Sanitary inspection of the coolie lines is held, especially in view of latrine systems, refuse incineration (fly destruction). Water supply, a service providing the coolies with hot tea (i.e., harmless drinking water) in the fields, the food problem (the beriberi menace), hygiene of maternity and infancy, are so many objects of medical care.

The regular information about the occurrence of contagious and infectious diseases gathered by the Pathological Laboratory and the obligatory quarantine for immigrant labour protect the country as much as possible against the import and spread of epidemics.

The costs of the medical and sanitary service amount to about 12–15 guilders (i.e., £1– £1 5s.) per labourer per year.

The medical association is the centre of vivid scientific contact between its members, where the steadily evolving problems are the subjects of exchange of thoughts.

W. J. Bais.

SUMATRA. Rapport xiii-xx, 1919–1925, Serdang Doctor Fonds Hospitaal Petoemboekan Oostkust van Sumatra. [**Report XIII-XX, 1919-1925, Serdang Doctor Fonds Hospital, Petoemboekan, Sumatra.**] [In parallel Dutch and English.] By Dr. G. BAERMANN, Geneesheer Directeur van het Serdang Doctor Fonds.—126 pp. With 8 charts on plates (7 folding). Printing by Varekamp & Co., Medan. [n. d.]

This report, which contains numerous tables and charts, deals with the experience of the years 1919–25, on certain plantations of the East Coast of Sumatra. The average number of coolies has diminished from 23,190 to 14,161 (one factor of the decline has been the withdrawal from the scheme of three temporarily affiliated estates). At the beginning of the period the population included some 7,700 women, at the

end rather more than 4,000. The (unstandardized) rate of mortality has declined from 7·8 per 1,000 to 5·1 .

The most important hygienic results attained are the following. Ankylostomiasis which, in 1907, affected 150 per 1,000 of the coolie population affected only 1 per 1,000 in 1925.

The morbidity rate from amoebic dysentery has declined from 15 per 1,000 to 0·8 per 1,000. The attack rate from bacillary dysentery has fallen from 10 per 1,000 to 0·07 per 1,000. In 1911 the incidence rate of syphilis was 77 per 1,000, in 1925 8 per 1,000. In 1925 about 15,000 coolies were examined and only five cases of syphilis were detected. Framboesia is also much less prevalent than formerly; 314 cases are recorded in 1919, 125 in 1925. The sickness rate for malaria was at a maximum (12·5 per cent.) in 1920, fell to 7·8 per cent. in the following year and has varied little in the four following years, when the figures were 3·3 per cent., 3·5 per cent., 2·3 per cent., 3·1 per cent. The opinion is expressed that the rate depends on the importation of new coolies from Java. Treatment is largely limited to the employment of quinine. On some estates the destruction of mosquito breeding-places has been attempted, but it would seem that efficient action on these lines is not economically practicable.

[The general results seem to justify the author's favourable conclusions, even if the cynical reader is apt to suspect that the roseate hues in which the contract labour system is painted are a little *too* bright. *Apropos*, it may be noted that the Dutch text does not always convey quite the same meaning as the English translation. In the English version we read that the coolies have " in their simple way " acquired the rudiments of hygiene. The Dutch text says they have acquired this useful knowledge *nolens volens*.]

M. Greenwood.

BUXTON (Patrick A.). **Further Data relating to Melanesian Populations.** —*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Mar. 9. Vol. 22. No. 5. pp. 435–442. [7 refs.] [London School of Hyg. & Trop. Med., London.]

This paper is supplementary to one summarized in the *Bulletin of Hygiene* (Vol. 2. p. 72) on depopulation in Melanesia. Fresh figures are given for the New Hebrides, Torres Islands and Banks Islands, some relating to quite small islands, and tables are set out of sex ratios in certain parts. The author's conclusions are these :—

" In the old days a variety of causes combined to render the life of the individual and of the community fragile; among these were malaria, ankylostomiasis and yaws, all of which were harmful to the individual's health ; and a number of customs detailed in my previous publication which can hardly have been good for society. It must be clearly understood that none of these causes, which were operative in the old days, can be mainly responsible for the sudden depopulation of the last century. The practice of abortion has always prevailed, but I agree with BAKER [this *Bulletin*, Vol. 26, p. 416] that it is probably now more common than before, and that it is an expression of the natives' feeling that life is a hopeless struggle.

" Factors which have become effective in the last century or less are numerous ; some affect the body, others the mind. Of the diseases it is difficult to get precise knowledge, for depopulation is active even in areas in which the white man seldom ventures. But the interesting work of BAKER in Santo has shown that in the heathen and untouched parts of that

island there are fewer living children than in those parts in which people are in contact with missionaries and other Europeans. The following figures show the number of living children per hundred adult women :—

Sakau.—Christians, 164 ; Heathen, 120.

Rest of Santo.—Christians, 171 ; Heathen, 79.

" These facts appear to me to be of the greatest importance, for they seem to show that much of the depopulation is due to disease and failure to treat disease. They show also that the loss of old customs is not so effective a cause of depopulation as we had supposed, for in the centre of Santo the heathen people are not affected by any European institution ; in spite of this they have fewer living children than the Christians who have abandoned much of the old manner of life and thought.

" Of the possible psychological causes of the depopulation it is extremely difficult to speak clearly or accurately. It was RIVERS who first suggested that Melanesians die out owing to lack of interest in life, rather than to any concrete cause. Most of us who have travelled in Melanesia have accepted this view, but BAKER's statistics have shaken my faith in it."

A. G. B.

LAMBERT (S. M.). **Health Survey of Rotumah.**—*Med. Jl. Australia.* 1929. Jan. 12. Vol. 1. No. 2. pp. 45–50.

Rotumah is an isolated island in the Pacific 500 miles north of Fiji. It is 7 miles long and ½ to 2 miles wide, and has a mixed population of pure Polynesians and 5 per cent. of others. It is a rich island ; the chief crop is the coconut. The vital statistics are unreliable ; the birth rate has varied from 60 to 39 and the death rate from 60 to 28. There is a European medical officer as well as a native medical practitioner and a good road round the island. An accurate census showed the population to be 2,402 [sex distribution not given], of whom 2,020 were medically examined. 377 persons or 18 per cent. were affected with some *eye condition.* This begins in early life with acute conjunctivitis which progresses to a chronic condition causing pterygium, often with connective tissue changes in the lids, corneal ulceration and staphyloma. This Pacific disease, found also in other islands, should be investigated. Of *tuberculosis* there was no unusual amount. 1,363 had *scabies.* Certified *lepers* were 13. 608 showed some sign of *filaria,* i.e., 30 per cent. ; in 423 the epitrochlear gland was enlarged. 164 had elephantiasis of the scrotum, filarial affections of the epididymis or hydrocele, all adult males ; only 20 persons had enlarged legs and 7 enlarged arms. Of 171 persons examined for microfilariae, 49 were positive or 28 per cent. Of 74 persons examined both day and night, 21 had the day blood infected, and 18 the night blood [the condition of the rest is not given]. " No periodicity in Rotuman filaria was found." Most of the few mosquitoes seen were *Culex fatigans,* but few were noticed. Of 2,355 persons, 1,962 or 82 per cent. had been vaccinated.

Part of the purpose of the survey was to treat the people for yaws and hookworm, if necessary. All were examined for *yaws.*

Number of persons examined for yaws infections	2,355
1. Primary (includes secondary)	53 or 2·3 per cent.
2. Secondary (latent yaws)	422 or 17·9 per cent.
3. Tertiary (painful lesions)	720 or 30·6 per cent.
4. Quarternary (non-painful lesions of adults)	379 or 16·1 per cent.
Total	1,574 or 66·8 per cent.

1,228 were treated [with what drug is not mentioned]. Careful histories were recorded and a negative history was obtained from only 24 persons between the ages of 2 and 16. The author suggests that

" the right line on which to fight yaws in the Pacific islands is to treat all people from 2 to 16, and to treat only those of the others who show lesions [painful] of the tertiary variety, or who ask for treatment. Concentration should be made on infants." Intramuscular injections of sodium bismuth tartrate, made in the hospital, were ineffective. No case of syphilis has ever been diagnosed.

For *hookworm*, all members of households over 2 years in three districts were examined, one plain smear and two specimens by the Willis flotation method.

Number of persons examined	412
Number infected with hookworm	300
Percentage infected	72·8
Number infected with *Trichocephalus trichiuris*	236
Percentage infected	57·3
Number infected with other parasites	Nil.

Other tables show the infection by age-groups and sex. 2,034 were treated, by carbon tetrachloride. Worms examined from these individuals were all Necator. Of 360 dwellings, 285 had latrines; almost all were of the cess-pit type, " poorly covered by board flooring " ; almost all permitted the breeding of flies.

A section is devoted to pigs. Of these there are 4,000, "a prolific source of flies which carry the prevalent eye conditions." Europeans settling among natives press for the exclusion of pigs from the villages. They then gradually disappear, which means a loss of fresh meat and vitamins. " Pacific islands which have plenty of pigs have the most enterprising and most disease resisting population " and the author comes down on the side of the pig.

In his conclusions the author suggests a heavy penalty for unreported primary yaws ; the disease should be wiped out. Hookworm disease can be controlled by periodic treatments. " Little can be done for filariasis under our present knowledge."

A. G. B.

TRABAUD (J.). Contribution à une meilleure connaissance de quelques maladies dites exotiques observées communément dans le bassin oriental de la Méditerranée. [**Contribution to a Better Knowledge of Some Diseases called Exotic commonly observed in the Eastern Mediterranean Basin.**]—*Rev. Prat. Malad. des Pays Chauds.* 1928. Dec. Year 7. Vol. 8. No. 12. pp. 620–623, 625–628. 1929. Jan. Year 8. Vol. 9. No. 1. pp. 660–663.

The diseases considered in this paper are on the one hand, 3 day fever, Mediterranean dengue and other dengues ; on the other, malaria and amoebiasis with intent to bring out manifestations which they share. The author, who has spent 6 years in the Near East and is Professor of Medicine at Damascus, formulates conclusion on the first head, thus : (1) that the term " 3 day summer fever " be alone allowed to describe the affection commonly called papataci fever and phlebotomus fever ; (2) that the term dengue be reserved for the eruptive and contagious fever commonly seen in the Eastern Mediterranean, especially in Syria and Egypt ; (3) that we give up the misleading terminology of " false dengue " to describe those seasonal, non-contagious diseases transmitted by mosquitoes and seen in tropical and subtropical regions ; that for these the unequivocal term " seasonal tropical or subtropical mosquito-transmitted fevers " be used for the time being.

[Professor Trabaud's paper does not clarify the knowledge of these fevers for the British practitioner. He would not object to (1). For (2) and (3) whatever the original dengue was, the term is now, in England and U.S.A., universally applied to a fever transmitted by *Aedes egypti* and nothing would be gained by such a change as is here proposed. One hopes that the term "Mediterranean dengue" will disappear from French papers.]

A. G. B.

DCHAPARIDSE (P.). [Zur Frage der Verbreitung, Epidemiologie und zur Bekämpfung tropischer Krankheiten in Abchasien nach den von Expeditionen gesammelten Material im Jahren 1927–28.] [**Distribution, Epidemiology and Prevention of Tropical Diseases in Abkhasia. Results of Expedition of 1927-8.**]—*Nachrichten der Tropischen Medizin.* Tiflis. 1929. Vol. 2. No. 4. pp. 263–279. With 8 text figs. [In Georgian script. German summary pp. 324–325.]

The Abkhasia Institute of Tropical Diseases sent out an expedition in the summer months of 1927 and 1928, which studied villages in the coastal zone (Black Sea), intermediate zone and the hilly regions. Anophelines were met with in each area, especially near the coast. The splenic index lay between 21 and 62·7, the parasitic index between 3·1 and 38·4. The latter reached its maximum between one and five years, and the former between 5 and 10 years. Later the parasitic falls below the splenic index. *A. maculipennis* was widespread, *A. bifurcatus* and *A. plumbeus* less so. Mosquitoes were very numerous in piggeries.

Hookworm incidence lay between 25 and 73 per cent., the intermediate and hilly zones being much more affected than the coastal zone. A series of pellagra cases was met with, forming 0·3 per cent. of all those examined.

[The Abkhasian Soviet Republic represents a part of the former kingdom of Georgia. The actual numbers studied are not given in the German summary.]

A. G. B.

KNOWLES (R.), ACTON (Hugh W.) & GUPTA (B. M. Das). **Puzzles and Fallacies in the Examination of Stained Films in the Tropics.**—*Indian Med. Res. Memoirs. Supplementary Series to Indian Jl. Med. Res.* 1929. June. Memoir No. 13. 35 pp. With 7 plates (5 coloured). [6 pages of refs.] [Calcutta School of Trop. Med. & Hyg., Calcutta.]

This work, intended primarily for the use of workers in the tropics, will be much appreciated in other countries where the same or similar puzzles frequently present themselves. It is copiously illustrated and the most important of the illustrations are the coloured plates, giving 224 figures of all manner of objects that are met with in the blood film. These figures have their explanation in the accompanying text and are all numbered so as to give easy reference to the description. It will provide a good exercise for even the experienced worker, if he endeavour

to supply his own explanation of the figures before he looks up the true one. And lest this remark might be taken as an aspersion on the faithfulness of the delineation or colour reproduction, we hasten to say that this is not the reason ; it is the wideness of the range of objects that will provide a good test of any one's knowledge of the subject. The first two parts of the work, dealing with : (1) errors due to technique ; and (2) abnormal blood elements in human blood films, are the most interesting and each of these has several subdivisions. To the worker in the tropics the search for malarial parasites in blood films is of the utmost importance and the advice given on how to avoid mistaking a blood platelet superimposed on a red blood corpuscle for a parasite is well worth bearing in mind. It is, to refuse to diagnose the appearance as parasite, " unless : (1) it focusses with, and not at, a higher level than the margin of the red cell ; (2) it has a definite outline and configuration ; (3) it shows (with the Romanowsky stains) blue staining cytoplasm and red staining chromatin." But the best of the advice follows this detail, and it is that anything " doubtful " is probably not a parasite. The same might be said of other parasites. The worker who in his days of inexperience has fallen into grievous error may take comfort from these pages by reflecting that he can claim to have erred in good company. This brochure should be assured of a welcome. A work by the authors on similar lines, which would also be welcomed, would be one on the puzzles and fallacies in the examination of films of faeces in both temperate and tropical zones. A useful bibliography accompanies the text.

W. F. Harvey.

NEWHAM (H. B.) & MARTIN (P. H.). **Further Notes on the Sedimentation-Rate of Erythrocytes.**—*Quarterly Jl. Med.* 1928. Oct. Vol. 22. No. 85. pp. 145–152. [10 refs.]

A continuation of the research noticed in this *Bulletin*, Vol. 25, p. 496. The further series of cases consisted of 29, including 7 sprue, 4 kala azar, 6 malaria, and one each of trypanosomiasis and amoebic and bacillary dysentery. For details the paper must be consulted. The conclusions were as follows :—

" 1. The results of laevulose tolerance tests do not suggest that any marked derangement of the liver necessarily accompanies rapid sedimentation.

" 2. The specific gravity of packed red cells and that of plasma have not been found to show alterations sufficient to account for a great increase in sedimentation-rate.

" 3. The relative viscosity of the plasma likewise shows no diminution in bloods showing rapid sedimentation. On the other hand, an increased viscosity of the plasma has been observed in Kala Azar, a disease associated with rapid sedimentation.

" 4. The size of the individual red cell, although found to vary within considerable limits, would not appear to be of any great consequence as a factor influencing the sedimentation-rate.

" 5. Auto-agglutination seems to have a dominant influence in promoting rapid sedimentation.

" 6. The ratio of plasma proteins (albumin to globulin) to each other has been found to be appreciably disturbed in cases of Kala Azar—here a globulin increase is associated with a positive formol-gel test, very rapid sedimentation, and auto-agglutination."

A. G. B.

CLARK (H. C.). **Haemoglobin Surveys in Labor Camps of the Banana Divisions (Mainland of Central America).**—*Seventeenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1928. pp. 245–246. [United Fruit Co. Med. Dept., New York.]

Field surveys in 1928, in which a comparison of spleen rate and parasite rate was made, gave a chance to record the haemoglobin index (Tallquist): the 5,501 persons fall into the following groups:—

Individuals with Hb. Index of	Per cent.
30 per cent.	0·23
40 ,, ...	0·67
50 ,, ...	2·9
60 ,, ...	18·3
70 ,, ...	41·3
80 ,, ...	29·1
90 ,, ...	7·4
100 ,, ...	0·09

It is suggested that their ability to do manual labour is probably below what would seem to be indicated by their haemoglobin rate. The low index is attributed to the following in order of importance: Malaria, malnutrition, intestinal parasites. The rates conform closely to those of a survey of 11,000 adult male Haitian negroes.

A. G. B.

NAIQUE (Ramanata). Sôbre as modificaçoes provocadas pelas proteinas em alguns elementos figurados do sangue humano. [**Modification of the Cellular Elements of the Blood by Protein Injection.**]—*Arquivos da Escola Méd.-Cirúrg. Nova Goa.* 1928. Ser. A. No. 3. pp. 264–326. [5 refs.] French summary pp. 326–327.

The trials were carried out on five groups of individuals who were injected with milk, antidiphtheria serum, their own blood, their own blood haemolysed with distilled water and 5 per cent. peptone, with the production in each group of hyperleucocytosis, lasting 24 to 72 hours, 24 hours to 5 days, 24 to 72 hours, 48 hours and 48 to 96 hours respectively.

W. F. Harvey.

SCHULTZ (Lester J.). **The Use of Buffer Citrate Solution as a Diluent and Preservative for Red Blood Cells.**—*Jl. Lab. & Clin. Med.* 1929. Apr. Vol. 14. No. 7. p. 674. [1 ref.]

The solution has the composition: sod. citrate 20; dibasic pot. phosphate 2; sod. chloride 3; doubly distilled water 1,000, with pH approximately 7·7. Whole blood mixed with this solution in proportions varying from equal parts to 1 in 200 showed no evidence of disintegration or any change in red or white cells. Even after being kept for 8 weeks at room temperature there was no change in pH and blood cell counts still remained the same. For counts of white cells an addition of methylene blue is desirable.

W. F. Harvey.

WRIGHT (Joseph H.). **A Simple Method of obtaining Permanently Stained Preparations to show Reticulocytes in the Blood.**—*Glasgow Med. Jl.* 1929. May. Vol. 111. No. 5. p. 292.

"A drop of saturated aqueous solution of cresyl blue, about one-sixteenth of an inch in diameter, is put on the ear with the broad end of a needle. The

skin is punctured through the drop, and when the mixture is about one-eighth of an inch in diameter films are made on cover-slips in the ordinary way. These are allowed to dry in air for three to four minutes, and are then stained with Leishman."

W. F. Harvey.

LITTLE (C. J. H.). **A Method of taking Blood for Blood Culture.**—*Jl. Roy. Army Med. Corps.* 1929. Apr. Vol. 52. No. 4. pp. 296–299. With 2 text figs.

The apparatus consists of a test tube containing nutrient medium into which projects rubber tubing for attachment of the puncture needle. At the time of use the apparatus, together with the puncture needle and a sterile test tube with wool plug are taken to the bedside of the patient. The rubber tubing is pulled up and the needle is fitted to it; blood is withdrawn into the culture fluid; rubber tubing, needle and wool plug are removed and a new wool plug, taken from the sterile test tube, is placed in position in the culture tube. Flaming of plugs in the manipulations is to be avoided.

W. F. Harvey.

RUGE (Heinrich). Ein einfaches Hilfsmittel zur mikrophotographischen Aufnahme von kleineren Gegenständen bei schwacher Vergrösserung und auffallendem Licht (Doppelspiegel nach Plett). [**A Simple Apparatus for Photomicrography of Small Objects with Incident Light.**]—*Klin. Woch.* 1929. Mar. 5. Vol. 8. No. 10. pp. 454–455. With 7 text figs.

The principle of the apparatus is simply that of double mirrors to produce equal top lighting of the object. This apparatus can be fixed to the stage of any microscope. The mirrors are capable (1) of a rotation on their axes through 0° to 180°, (2) of horizontal angular displacement through 0° to 90° and (3) of a lateral separation amounting to about 10 mm. For ordinary observation daylight or a microscope lamp suffices and for photomicrography 2 light sources at right angles to one another are required.

W. F. Harvey.

HOFSTEE (H. G.). Oriënteerende proeven met den voedingsbodem van Léon Muller voor het faecesonderzoek. [**Experiments with Léon Muller's Medium for Faeces Examination.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Feb. 20. Vol. 69. No. 2. pp. 125–131. [Inst. of Trop. Hyg., Amsterdam.] [5 refs.]

The author tested the value of Léon Muller's tetrathionate medium for its applicability to bacteriological faeces examination in the Tropics. This medium is made up by mixing: (1) 5 per cent., calc. carbonate in the nutrient bouillon, lemco 1 per cent., peptone 1½ per cent., pot. chloride and di-sod. sulphate each 2½ per mille; (2) 50 per cent. sod. sulphate; and (3) iodine 25; pot. iodide 20; water 100, in the relative proportions 90, 10 and 2 cc. It is used as an enrichment medium prior to plating.

He paid special attention to the growth of organisms of the dysentery group, paratyphoid A and paracoli bacillus. Experimenting with pure cultures, and with the same strains mixed either with coli culture or with faecal emulsions, the results confirmed the selective growth of typhoid and salmonella bacilli in Muller's medium and the inhibiting influence it exercises upon the dysentery bacilli of various types and upon paratyphoid A. Proteus and paracoli bacilli, however, grow

well. After incubation of longer than 24 hours sometimes also the coli bacillus starts to grow. For a complete laboratory diagnosis from faecal material direct plate cultures on Endo agar (or similar media) remain necessary to detect dysentery and paratyphoid bacilli and the exact identification of isolated strains is required to exclude confusion of typhoid with paracoli and proteus. Further research is desirable in regard to possible influence of the medium on the various strains, the practical importance of the solid tetrathionate medium, etc.

W. J. Bais.

BOURGUIGNON (G. C.). Note préliminaire sur la conservation sous les tropiques des souches de meningocoques. [**Preservation of Meningococcus Cultures in the Tropics.**]—*Ann. Soc. Belge de Méd. Trop.* 1929. Mar. 31. Vol. 9. No. 1. pp. 59–61. [Bact. Lab., Leopoldville.]

The death of meningococcus in culture, necessitating daily subculture in order to maintain it alive, is attributed to rapid increase of alkalinity and to the presence of too much oxygen. An ascitic fluid medium, containing 0·2 per cent. glucose, and covered with a layer of vaseline has been used for the preservation of gonococci. The glucose by its fermentation retards the increase in alkalinity. This medium has been found by the author equally useful for the preservation of both meningococci and gonococci, which have been kept alive for 37 days without subculture.

W. F. Harvey.

CUNNINGHAM (J.). **A New Technique for handling Infected Monkeys.** —*Indian Jl. Med. Res.* 1929. Apr. Vol. 16. No. 4. pp. 1033–1035. With 4 figs. on 2 plates & 1 text fig. [1 ref.]

In the case of diseases transmissible from animals to man special care has to be taken with experiments. Most of the immunization experiments performed upon animals for rabies have been preinfectional and the danger from handling is not one of contraction of the disease during the manipulations. It is otherwise when the experimentation is postinfectional. The author gives here useful details of the precautions to be taken in such a case and illustrations of the procedure. Briefly stated, they consist in the use of special clothing, protection of the hands by gloves, special living cages and, most important of all, a special cage which the animal enters for the inoculation and which leaves the lower part of the chest, the abdomen and the lower limbs available for injection or for withdrawal of venous blood.

W. F. Harvey.

HEINEMANN. Die Luesreaktion von Kadisch im Arbeitskreis des Tropenarztes (mit einigen Bemerkungen ueber die Bedeutung vergleichender Blut- und Liquoruntersuchung). [**Kadisch's Reaction among Labourers in the Tropics.**]—*Muench. Med. Woch.* 1928. July 6. Vol. 75. No. 27. p. 1161. [11 refs.] [Senembah Company's Tandjong Morawa Hosp., East Coast Sumatra.]

The author has recorded in previous papers the difficulty of determining the real significance of a luetic positive reaction of serum in the

tropics. He now records that in recent years a large number of the Javanese labourers have become infected with yaws. Many of these cases even when yaws is latent give a positive serum reaction. There is little yaws in the Chinese labourers, but these often have leprosy. All the inhabitants suffer at some time from malaria, which affects the serum reaction. He has found a positive reaction in malaria cases even when malaria parasites were not detected in the peripheral blood. He has tested a number of serums by the Wassermann reaction, and as well by the flocculation tests of Meinicke and that described by KADISCH in 1926.

Serums of	Wassermann positive.	Meinicke positive.	Kadisch positive.
	Per cent.	Per cent.	Per cent.
162 Manifest lues or yaws	81	84	84
121 Gonorrhea or bubo ...	22	23	23
1,179 Internal or skin symptoms	14	13	15
82 Pregnant women ...	15	13	17
181 Surgical cases	11	12	06 [*sic.*]
134 Malaria	16	15	21
81 Cases—clinically (rigor and fever) malaria	30	20	35

The author notes that in malaria cases with positive lues blood serum reaction, the cerebrospinal fluid gives a negative reaction. He comments that this may have a bearing on the question of the therapeutic action of malaria in cases of syphilis with positive reaction in the cerebrospinal fluid.

H. M. Hanschell.

CIARROCCHI (Luigi). La reazione di Meinicke con antigene colorato nella malaria e nella tubercolosi. Considerazioni cliniche. [**The Meinicke Reaction in Malaria and Tuberculosis.**]—*Riforma Med.* 1929. May 4. Vol. 45. No. 18. pp. 600; 603–605. [Dermo-Syph. Clinic, Univ., Rome.]

The author carried out the Wassermann reaction and the Meinicke reaction with ordinary antigen and with coloured antigen according to Borowskaja's method, M.T.R. modification IV, on 100 cases of malaria (8 quartan, 14 benign, 54 subtertian, and 24 chronic malaria) and 7 of mixed malaria and syphilis, and on 156 cases of tuberculosis. The W.R. was positive in 16 of the uncomplicated malaria sera (two each of quartan and benign tertian, three of the chronic malarias, and nine of the subtertian); the ordinary Meinicke was positive in 14, the same as with the W.R., but the quartan cases were all negative; with the modified Meinicke the chronic cases were as before, but only one benign and 7 subtertian gave a positive.

In all the tuberculous subjects the W.R. was negative, but in 8 per cent. the M.T.R. was positive.

H. Harold Scott.

CHOPRA (R. N.), GHOSH (N. N.) & RATNAGIRISWARAN (A. N.). **Some Medicinal Plants growing in the Himalayas. II.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 770–779. [7 refs.] [School of Trop. Med. & Hyg., Calcutta.]

The previous paper was summarized in this *Bulletin*, Vol. 24, p. 233. The authors here deal with plants growing in the mountains which have similar properties to those in the pharmacopoeias and for which they would form substitutes. The plants examined and discussed are *Colchicum luteum, Mentha arvensis, Juniperus communis, Ephedra vulgaris, Citrullus colocynthis, Berberis asiatica, Picrasma quassioides, Swertia chirata,* and Aconite.

A. G. B.

CHOPRA (R. N.) & GHOSH (Sudhamoy). *Terminalia arjuna:* **its Chemistry, Pharmacology and Therapeutic Action.**—*Indian Med. Gaz.* 1929. Feb. Vol. 64. No. 2. pp. 70–73. [2 refs.] [Calcutta School of Trop. Med. & Hyg., Calcutta.]

The bark of *Terminalia arjuna*, which is widely distributed, is regarded in India as a cardiac tonic and a liquid extract of it is on the market in Calcutta. The authors therefore took up its study as a part of the Indigenous Drugs Inquiry. Their analysis of the bark did not reveal the presence of any active principles of the nature of alkaloid, glucoside or essential oil. Different fractions obtained in the course of analysis from the bark were found not to have any marked physiological activity. Moreover, an alcoholic extract tried on a number of patients suffering from cardiac decompensation did not show any appreciable effects.

A. G. B.

CRUIKSHANK (A. G.). **Idiosyncrasy to Quinine Injections.** [Memoranda.]—*Brit. Med. Jl.* 1929. Jan. 19. p. 104.

A woman of 65 years, with varicose veins, received an injection of 1 cc. of quinine and urethane solution containing 0·13 gm. quinine. She began to cough and five minutes later collapsed, falling to the floor. She was extremely cyanosed and complained of inability to breathe and sense of constriction in the chest. The pulse was irregular and could hardly be felt. She gradually recovered and then stated that 24 years previously she had taken quinine by the mouth, and suffered from breathlessness, and was advised not to take it again. She returned home next morning. Ten days later a cutaneous test was made. One drop of a 1 per cent. solution of quinine hydrochloride was placed on the forearm and the skin under it scarified. Ten minutes later a definite wheal, surrounded by erythema, was seen. A control of sterile water showed only slight redness. A similar test on the author's arm gave no reaction. When there is reason to suspect idosyncrasy to quinine this simple test should be employed.

A. G. B.

GRAY (St. George B. Delisle). **Idiosyncrasy to Quinine Injections.** [Memoranda.]—*Brit. Med. Jl.* 1929. Feb. 2. p. 200.

The author describes a similar experience, a woman of 58 years into whose vein he injected 1 cc. of quinine urethane solution for varicosity. She became cyanosed, pulseless, with pupils widely dilated and rattle in throat. On regaining consciousness she vomited. The dermal test was done as in CRUIKSHANK's case with the same results and the author intends to apply it to all newcomers who cannot give assurance that they are able to take quinine without ill effects.

A. G. B.

HUSAIN (Mohd. Ajmal). **Quinine Abscesses.**—*Indian Med. Gaz.* 1929. June. Vol. 64. No. 6. p. 330.

The case of a Bengalee woman of 40, who 14 years after injections of quinine into the buttock developed an abscess there; "necrotic tissue mixed with pus was scraped away embedded deeply in the substance of the gluteus maximus." No inconvenience was felt in the interval.

A. G. B.

BIESIN (A.). Vergiftungsgefahr und Idiosynkrasie bei Darreichung von Oleum chenopodii. [**Risk of Poisoning and Idiosyncrasy in the Administration of Oleum Chenopodii.**]—*Muench. Med. Woch.* 1929. Apr. 19. Vol. 76. No. 16. pp. 661–664. [24 refs.] [Armitstead Children's Hosp., Riga, Latvia.]

The author has collected from published papers 41 cases of poisoning and 30 deaths from oil of chenopodium. Analysing the causes he finds them to be: (1) Overdose of the oil; a usual dose is 3 cc., but not more than 1·2 cc. should be given at one time; (2) unsuitable preparation and way of administration; (3) course too long continued; (4) omission of a purgative. He refers with approval to BRUNING's rules [see this *Bulletin*, Vol. 21, p. 193]. Several case histories are given. The author thinks that owing to the risk of unforeseen and unforeseeable idiosyncrasy the use of the oil should be given up till we possess a less dangerous preparation.

A. G. B.

MITRA (A. C.). **Toxic Symptoms following Administration of Carbon Tetrachloride.**—*Indian Med. Gaz.* 1928. Nov. Vol. 63. No. 11. p. 637.

One hour after taking carbon tetrachloride a patient felt nausea and in a few minutes commenced vomiting. He was seized soon after by colicky pains in the abdomen. Twenty minutes later urticarial eruptions which soon became confluent appeared on the body. The condition had completely subsided the same evening. In an editorial footnote Dr. MAPLESTONE's suggestion is cited to the effect that the symptoms might have been due to *Ascaris* toxin.

R. T. Leiper.

CAWSTON (F. G.). **Emetine Poisoning.**—*Jl. Trop. Med. & Hyg.* 1929. Jan. 15. Vol. 32. No. 2. pp. 22–24.

The author reminds us that the immediate toxic effects of emetine are less dangerous than those due to its cumulative action, and suggests that the daily dose should be replaced by a larger one on alternate days to enable the earliest sign of accumulation to be recognized. He finds the curative dose for schistosomiasis to be just double that required for amoebic dysentery. The maximum total dosage is one grain for each year up to the age of 20. Towards the end of a course of these relatively large doses albumin sometimes appears in the urine; this is a danger signal. The earliest sign of paralysis is an increase in the pulse rate from irritation of the nerve-endings in the heart muscle. In dysentery emetine should be given orally and intramuscularly at the same time; he doubts the necessity of intravenous administration. He finds that if sulphate of soda treatment is given over a period of five days less emetine is needed.

A. G. B.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE. 1929. Feb. Vol. 22. No. 4. pp. 559–568 (Sect. of Therap. & Pharm., with the Sect. of Trop. Dis. & Parasit. pp. 1–10). [12 refs.] **Discussion on the Special Uses of Antimony** [CHRISTOPHERSON (J. B.), GUNN (J. A.), LOW (G. Carmichael), MANSON-BAHR (P. H.), CASTELLANI (Aldo) & HARKNESS (A. H.)].

In this discussion Christopherson treated the subject historically, Gunn chemically, and the other speakers from the clinical side. The discussion is not one for summary.

A. G B.

BAUER (Hugo) & BECKER (Johanna). Untersuchungen ueber Verbindungen aus dem Gebiete des "Germanins" (Bayer 205). [**Researches on Substances related to "Germanin" (Bayer 205).**]—*Arb. a. d. Staatsinst. f. Exp. Ther. u. d. Georg Speyer-Hause zu Frankfurt a.M.* 1928. No. 21. pp. 10–25. [8 refs.] ["Georg-Speyer" House, Frankfurt a.M.]

The object of this paper is to summarize briefly the history of the research begun in 1904, which led to the production in 1920 of "Bayer 205," now known as "Germanin," As is now well known, the constitution of the new drug was not disclosed and the French chemist, FOURNEAU, and his colleagues produced independently in 1924 the rival drug known as "Fourneau 309," which, the authors admit is identical with "Germanin." The French chemists at the same time pointed out that even very slight modifications in the chemical structure of this drug led to loss of activity, and a large part of the present paper is occupied by chemical formulae representing the modifications tried by the German workers. The results of biological tests with these modifications confirm FOURNEAU'S statement. Similarly, attempts to reinforce the activity by the insertion of arsinic acid residues failed. The drug is at present peculiar among purely synthetic drugs in its high therapeutic index (1-240) and in being insusceptible of modification without serious loss of therapeutic efficiency. The authors refer to Emil FISCHER'S lock and key analogy in regard to the specific action of enzymes to illustrate this point and suggest that the drug possibly resembles the anti-bodies produced by living organisms.

T. A. Henry.

PETZETAKIS. Considérations cliniques sur la splénomégalie égyptienne. —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1928. July 26. Year 44. 3rd Ser. Vol. 52. No. 26. pp. 1290–1292. [2 refs.]

——. La pathogénie de la splénomégalie égyptienne. [**The Pathology of Egyptian Splenomegaly.**]—*Rev. Méd. et Hyg. Trop.* 1929. Jan.–Feb. Vol. 21. No. 1. pp. 25–29. With 1 text fig. [4 refs.]

The splenomegalies of Egypt are habitually called Banti's disease or malarial splenomegaly. This is erroneous. They are not malarial nor are they leishmanial. They begin insidiously, sometimes with fever and chills. Fever, however, soon disappears. Progressive cachexia follows and when the patient presents himself the spleen is already large and often the liver as well, though to a less degree. In some instances the spleen fills the belly. There is no pain referred to this organ, only a complaint of lack of strength. The mucous membranes are pale but

there is no marked loss of flesh. The red cells vary between 2 and 3 millions and there is leucopenia of 2,000–4,000. In persons over 30 there may be ascites, but never in young subjects in spite of the size of the spleen. There is sometimes bronchitis and sometimes haemoptysis. Anaemia may be followed by diarrhoea and towards the end there may be haematemesis or bloody stools. Death is slow but sure in patients between 6 and 18 years, the course being the shorter the younger the victim. The disease is rarely seen in persons over 30. Medicinal treatment is without effect ; splenectomy is the treatment of choice. In 6 out of 8 spleens removed, the author has found certain corpuscles in smears stained by Giemsa (described below). They are generally round and stained pale blue and are about half a red cell in diameter. At one of the poles is a red point ; the rest of the protoplasm seems filled with small bodies in the form of fine rods stained deep blue. Petzetakis suggests that these are protozoal.

A. G. B.

PETZETAKIS (M.) & PAPADOPOULO (J.). Sur la nature de la splénomégalie égyptienne. [**The Nature of Egyptian Splenomegaly.**]—*C.R. Soc. Biol.* 1928. Vol. 99. No. 38. pp. 1896–1897. [1 ref.]

In the last year the authors have examined 8 cases of splenomegaly, all but one in natives of Alexandria of the poor class. In six spleens puncture was done, in the others the spleens were removed. Smears were examined and sown on various media. Neither Leishmania nor Plasmodium were discovered and the cultures were negative in 6 cases. In one case a spirochaete developed, in the other a fungus, which however, had no clear pathogenic effect on small animals. Six times out of eight, however, certain corpuscles were seen of the nature of which the author is doubtful. Usually rare, they are chiefly extracellular, and appear as irregularly circular bodies, stained pale blue. At one of the poles there is sometimes a red dot of variable form and size, and the rest of the protoplasm, stained pale blue, appears to be sometimes filled with small corpuscles consisting of fine rods stained very deep blue, almost black (length equal to half an erythrocyte). The authors think the mycotic nature of splenomegaly to be very doubtful and suggests that the body which they describe is an unknown protozoon.

A. G. B.

VALENZUELA (A. J.) Notes sur la signification des splénomégalies dans les pays chauds. [**The Splenomegalies of Hot Countries.**]—*Bruxelles-Méd.* 1929. June 30. Vol. 9. No. 35. pp. 990–994. [26 refs.]

The author has observed some 5,000 cases of malaria at the general hospital at Guayaquil, Ecuador, and in private practice. *P. falciparum* was found by itself in 50 per cent. of these cases and associated with another species in 10 per cent., *P. vivax* in 22 per cent., *P. malariae* in 6 per cent. and the last two in association in 4 per cent. Of cases of splenomegaly observed [the actual numbers are not given], 74 per cent. were malarial and disappeared with quinine treatment and 8 per cent. were reduced by quinine treatment ; 12 per cent. were syphilitic ; 4 per cent. were ascribed to tuberculosis, abscess or leucaemia, and 2 per cent.

were of undetermined origin. Thus two-thirds of the non-malarial splenomegalies were syphilitic; in 64 of these cases there were no signs or symptoms and the diagnosis was made by the finding of a positive W.R. in the cerebrospinal fluid.

A. G. B.

TARDIEU. Anémie splénique et splénomégalie tropicale en Annam. [**Splenic Anaemia and Tropical Splenomegaly in Annam.**]—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 99–108. With 10 plates (2 coloured). [9 refs.]

The author here gives an account of a successful method of treatment of the condition named in the title, currently known as "malarial splenomegaly," which has been practised by Dr. NORMET. A citrate solution is employed, made up on the following formula and called citrase :—

citrate of soda	52 gm.
citrate of magnesia	10 gm.
tartrate of iron and potassium	3 gm.
citrate of manganese	0·005 gm.
distilled water	1000 cc.

The patient receives in a vein daily one-eighth cc. per kilo for 12 days, followed by a rest of 15 days. The series is repeated till benefit accrues. Some patients have received 20 series in the course of a year. The action is continued after the treatment, which provokes a myeloid reaction of the spleen. Most had had a preliminary course of quinine whether malaria parasites were detected or not, but two of those reported had no treatment other than citrase. The author does not think that malaria plays a part in the etiology.

The hypertrophy of the spleen varies; the large diameter may be 15 cm. or as much as 45. There is frequently ptosis so that when the spleen regains its normal volume its edge is below the chondral margin. Hepatic hypertrophy has been noted in 6 out of 15 patients, the edge being 2–4 fingers' breadths below the false ribs. In 3 of the 15 there was a subicteric tinge of the mucosa and skin. Circulatory troubles are evidenced by oedema of the lower limbs and slight ascites. Anaemia is usually severe. One patient had less than a million r.b.cs.; 7 less than 2 millions. Haemoglobin is likewise diminished, but in less degree. The kidney is spared. There is loss of flesh and parchment skin. The disease is clearly differentiated from Banti's disease, and from the splenomegalies of syphilis and tuberculosis. Leishmania has not been found.

No complete account of the pathology can be given because all the patients have recovered or are tending to recovery. Information has been obtained, however, by frequent splenic puncture which the author finds to be quite free from risk. In all cases before treatment, two kinds of abnormal cell have been obtained: plasma cells and polykaryocytes. The plasma cells have their nucleus excentric, basophil protoplasm and a clear area round the nucleus. The polykaryocytes resemble plasma cells, but are multinucleated. In some cases Rieder's cells have been found. The leucocyte formula varies in each patient from one puncture to another.

From the first injection of citrase the spleen begins to present a myeloid reaction; there appear erythroblasts in karyokinesis,

megaloblasts, and polychromatophilic and orthochromatic normoblasts. As improvement goes on, the plasma cells and polykaryocytes disappear, and then the cells of the red series. The cells named are pictured in two plates. As the cytological conditions change the splenomegaly lessens, and in some patients the spleen has returned to normal. Many patients have resumed an active life. The anaemia improves; the circulatory symptoms disappear; weight is put on. A table shows the chief changes induced by treatment in the 15 patients.

A. G. B.

GORDON (A. Knyvett). **The Rôle of the Spleen in the Causation of Haemorrhage.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Jan. 30. Vol. 22. No. 4. pp. 309–323. With 1 coloured plate. [16 refs.]

The condition of haemorrhage associated with a deficiency of platelets in the blood—essential thrombocytopenia purpura haemorrhagica—is completely cured in most cases by removal of the spleen; the platelet count returning to its normal value of somewhere in the neighbourhood of quarter of a million per cmm. The author found in two cases during operation that the number of platelets in the splenic vein was "much smaller" than that in the artery, which would seem to indicate that the spleen destroys platelets. There is other confirmatory evidence of this activity, e.g., antiplatelet serum injected into a guineapig will produce purpura and thrombocytopenia, but not in splenectomized animals. It is hardly necessary to add that other explanations of the facts are forthcoming; e.g., that purpura is due not to *increased* destruction—which, indeed, is not accounted for in purpura, even if we admit that there is a normal destruction on the part of the spleen—but to diminished production of platelets presumably on the part of the megakaryocytes. We may note here incidentally that the function of the platelets as a factor in thrombosis following parturition, fractures and acute fevers—in all of which conditions there is a thrombocytosis—has been much elucidated by Howel EVANS (1929).* In other haemorrhages than purpura we have other factors than platelets. Thus in septicaemia the altered state of the blood is indicated by increased coagulation time, whereas this is not affected in purpura, though the bleeding time is increased; in haemolytic jaundice the fragility of the red cells is increased, an increase so definite as to be readily estimated by salt solutions of varying strengths; in the splenic anaemias there is an associated leucopenia. [Apart from its intrinsic value as a contribution to our knowledge of spontaneous haemorrhage and the functions of the spleen, this paper shows the importance of simple observations like that of a platelet count. It will be admitted that our knowledge of the blood in many tropical diseases is still very defective. Not only would the usual red cell and leucocyte counts and haemoglobin estimations be made to yield more information by improved methods and by continuity of observations, but we require to fill in the gaps in our knowledge in regard to such matters as platelets, bleeding time, coagulation time, viscosity, refractivity, sedimentation rate, etc., not to mention chemical composition of the plasma.]

J. W. W. Stephens.

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* *Vide* "Discussion on Post-Operative Thrombosis." *Proc. Roy. Soc. Med.* 1929. Mar. Vol. 22. No. 5. pp. 729-733.

GRÉGOIRE (Raymond) & EMILE-WEIL (P.). Des gastrorragies au cours des splénomégalies chroniques primitives. [**Gastric Haemorrhage in the Course of Primary Chronic Splenomegaly.**]—*Presse. Méd.* 1929. Mar. 23. Vol. 37. No. 24. pp. 385–387. [4 refs.]

Sudden haematemesis in a healthy person suggests disease of the stomach but it may equally well result, the authors point out, from a a lesion of the liver or, especially, the spleen. Some of the primary chronic splenomegalies are of known origin—malarial, bilharzial, leishmanial, tuberculous; others cannot be classed; but in all of them sudden abundant haematemesis may occur. Four observations are given, of bilharzial splenomegaly, "plasmodial splenomegaly of undetermined cause," splenomegaly of undetermined cause, haematemesis in the course of a probably tuberculous splenomegaly; three of the patients were cured by splenectomy. Stomach bleeding is particularly common in the splenomegaly accompanied by Gandy-Gamna nodules.

A. G. B.

MELENEY (Henry Edmund). **A Case of Splenomegaly showing Para-Typhoid Bacilli.**—*Amer. Jl. Trop. Med.* 1929. Mar. Vol. 9. No. 2. pp. 97–104. [15 refs.] [Peking Union Med. College, Peking, & School of Med., Vanderbilt Univ., Nashville, Tenn.]

The author refers to the collection of diseases included under the name "tropical febrile splenomegaly." Details are given of the case of a Chinese male with large spleen, fever, night sweats and ascites. The Wassermann test was negative, the faeces showed cysts of *Entamoeba histolytica*, and the sputum showed no tubercle bacilli. A splenectomy was performed and a paratyphoid C bacillus recovered from the organ in the laboratory. At no time thereafter was it possible to obtain cultures of this organism from the ascitic fluid, blood or stools of the patient, while the tests of the patient's serum for agglutinins against the organism were uniformly negative.

W. F. Harvey.

NANTA (A.). Les ulcères de jambe des splénomégaliques. [**Ulcer of the Leg and Splenomegaly.**]—*Rev. Prat. Malad. des Pays Chauds.* 1928. Dec. Year 7. Vol. 8. No. 12. pp. 587–590, 593–594.

In 1926 the author drew attention to the frequent occurrence of ulcer of the leg in Algerian splenomegaly. Such an association has been described in splenomegaly from Egypt, congenital haemolytic icterus and in sickle anaemia. In the Algerian cases the ulcer is deep, indolent, irregular with purplish, raised, atonic margin. It is the size of a one franc piece or is larger and it may surround the limb. The usual site is the outer side of the leg above the ankle. Round the lesion is an indurated, strongly pigmented area. The ulcer may persist for years; it is commonest in subjects between 12 and 18 years. The W.R. is positive. This and other features suggest syphilis, but treatment is ineffective and the histology is different. In two observations the ulcer healed when the spleen was removed and the author says that he produced an ulcer in a guineapig by the injection of a fragment of such a spleen. Leg ulcers are not the only manifestations; there are also urticarial lesions, melanodermia, furuncular nodules, large cicatrices of ulcers of the trunk.

As to the nature of the splenomegaly, he refers to the Brazilian form described by STRONG and others [see this *Bulletin*, Vol. 24, p. 325]. Recently he has found aspergillar filaments in these spleens, but whether the mycotic infection is primary or not he is unable to say; most of the spleens were infected also with microbes. It is possible, he thinks, that some of the ulcers are aspergillar in origin. The association of ulcer and splenomegaly deserves careful study.

A. G. B.

DHRUV (J. Durlabh). **A Note on Traumatic Rupture of the Spleen.**—*Lancet.* 1929. Jan. 12. pp. 72–73.

The author in his hospital practice in Bombay has removed nine ruptured spleens in the course of two years. The incidence of this accident in the tropics is high, this being generally ascribed to the prevalence of malaria and other tropical fevers, but in more than one of the nine cases the organ was small and of normal consistency and malarial changes could not be demonstrated. The possibility of rupture must be considered in all such injuries as falls from a height, railway and car accidents, etc., and in these cases careful examination of the abdomen is held to be imperative. The symptoms to which the writer attaches most importance are thirst, and pain and tenderness in the left hypochondriac region. The pulse he considers of little or no use as a guide, and deprecates waiting for a "haemorrhagic pulse" before arriving at a diagnosis. Restlessness is usually though not invariably present. Dullness as a physical sign of value is much overrated; and rigidity is held to be rather a contraindication to rupture, being dependent chiefly on trauma of the parietal peritoneum.

Before operation diagnosis is confirmed by the insertion of a wide-mouthed needle into the peritoneal cavity. Though sometimes as many as three punctures were necessary the author has always found blood.

The technique of the operation is simply described. A long left paramedian incision is employed. The effused blood, which in this injury does not coagulate, is collected in a sterile bowl with warm saline and "injected straight into the vein of the patient." Removal in the majority of the cases was found easy. The possibility of injury to other organs should be excluded before the abdomen is closed. The risk of including the tail of the pancreas in the structures included in the ligatured pedicle is thought to be greatly exaggerated.

Results have been encouraging, five out of the nine cases recovering. Excision is held to be the best treatment and suturing of the lacerated organ is not advised. Early diagnosis is essential. It is noted that when the rupture is associated with a dilated stomach a fatal termination is usual.

J. J. Pratt.

BOSE (A. N.) & BANERJI (B. N.). **An Investigation into the Cause of Ascites.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 664–674. [13 refs.] [Prince of Wales Med. College, Patna.]

Ascites in India is usually diagnosed as hepatic, renal, cardiac or tuberculous. CUNNINGHAM (1917) noticed the occurrence of ascites and hepatic cirrhosis as a complication of dysentery and MEGAW has

reported a number of cases as due to chronic peritonitis of dysenteric origin [this *Bulletin*, Vol. 19, p. 40; Vol. 21, p. 688]. The authors studied all cases of ascites admitted to hospital at Patna from August 1927 to February, 1928, 35 in all. Of these 16 which were obviously of cardiac, renal or hepatic origin were disregraded, leaving 19 for systematic examination. These were in male Hindus or Mohamedans; 15 gave a history of dysentery or diarrhoea recently or within 2 or 3 years; 12 had had malaria or kala azar and 12 gave a history of typhoid.

The onset is insidious with gastro-intestinal disturbance and debility; swelling of the abdomen is gradual and progressive with intermissions. The fluid becomes excessive in 3–5 months. The patient is then emaciated with dryness and loss of elasticity of skin. Anaemia not marked. No jaundice. No haematemesis or melaena. Fever usually absent. Oedema of feet and legs supervenes, disappearing when the ascites is tapped. The patients stand repeated tappings well. Their ultimate fate is unknown.

The authors investigated the efficiency of the renal, cardiac and hepatic systems and studied the blood and ascitic fluid. The tests for renal and cardiac efficiency showed no notable loss. The laevulose tolerance test and Widal's haemoclastic crisis test showed that the majority suffered from impaired function of the liver. The results of blood examination are tabulated. In 5 cases of 16 the spleen was enlarged from palpability to 3 inches below the costal margin; three of these patients were positive to both the formol-gel and urea-stibamine test as were two other cases without splenic enlargement. These reactions are regarded by the authors as diagnostic of kala azar. Seven of the 19 gave agglutination reactions with *Bact. typhosum* and *paratyphosum* A and B, and 16 of the 19 gave a positive reaction to dysentery organisms of the Flexner type (from 1 : 80 to 1 : 20). Except in one case the ascitic fluid had a low specific gravity, was clear and did not clot, showing it to be a transudate. Its injection was innocuous to guineapigs and no growth was produced on culture; it was therefore non-tuberculous and sterile. The authors discuss the relation of this condition to kala azar, and note that the five cases had all had previous dysentery. As to the rest, they consider that they have established a definite relationship with bacillary dysentery.

"In the absence of sufficient evidence in favour of cirrhosis of the liver, tuberculosis and inflammation as aetiological factors, a mechanical origin of the fluid due to disturbance of the absorptive power of the upper part of the peritoneum caused by previous dysenteric infection, seems probable."

A. G. B.

DONNISON (C. P.). **A Case of Recurrent Ascites.**—*Kenya & East African Med. Jl.* 1928. Oct. Vol. 5. No. 7. pp. 243–246. [2 refs.]

Cases of ascites of uncertain origin are not rare amongst natives of Kenya. As a rule they are mild and do not cause much disability. The case reported presents unusual features.

A Kisii woman, aged about 20, was admitted to hospital in February, 1926, with a history of abdominal swelling for 9 months, again from May–September and in October. She was tapped from time to time, till in December the paracentesis had to be repeated every 2 or 3 weeks. After

tapping, a moderately enlarged spleen could be felt and the liver was just palpable. No fever in hospital. No blood parasites found. Taenia and Trichocephalus were present but no evidence of Schistosoma. A differential leucocyte count revealed eosinophilia of 44 per cent. On December 22nd, the operation of epiplopexy was carried out. An enlarged spleen was seen with copious dense adhesions round it. The surface, where it was visible, had a thickened capsule with grayish white thickened patches. The liver was surrounded with copious adhesions. The omentum was partly adherent to the liver, slightly thickened and contracted. The peritoneum appeared normal. Recovery from the operation was uneventful. Fluid slowly reaccumulated up to a point but tapping was unnecessary and has not been resumed. In February, 1928 she declared herself well: no sign of fluid could be elicited; the spleen was moderately enlarged. The author states, without giving figures, that cases of Schistosoma infection in the Kisii district are very rare. He draws attention to the success, in this case, of epiplopexy.

A. G. B.

NIGAM (K. S.). **Surgery for the Relief and Cure of Endemic Ascites.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 1. pp. 244–250.

The author premises that endemic ascites exists in the tropics as a definite disease absolutely distinct from ascites due to ordinary well-known causes. It is characterized by a collection of free fluid in the peritoneal cavity, progressive emaciation, and a lingering course eventuating usually in death. Its marked prevalence in all parts of India and the continued reticence of medical writers with regard to it, induce him to bring the affection and the possibility of its successful surgical treatment to notice.

Both sexes and all ages, castes, and occupations are affected, the most common age being 35 to 40, and rustics rather than dwellers in towns providing the larger number of sufferers. In all cases there is a slow fibrosis of the peritoneum involving mainly the lining of the liver, spleen, and upper half of the abdominal cavity. The unknown causative factor of this may be a toxin circulating in the blood, or an organism too elusive to control in cultures. In some instances there is a history of antecedent gastro-intestinal trouble, and MEGAW is said to regard the disease as a "chronic bacillary (dysenteric) peritonitis," brought about by absorption of pent up toxins consequent upon ill-advised astringent treatment in dysentery. The fluid is of the nature of a transudate, alkaline in reaction, of a specific gravity of 1003–5, containing about 0·2 per cent. of albumin. The degenerated and fibrosed peritoneum filters this off from the engorged extra-peritoneal capillaries, while it loses its absorbing power. Hence the distended abdomen, wasted limbs, thirst, toxaemia, and general asthenia met with in a typical case.

The writer is of opinion that in early cases when palliative treatment after reasonable trial—say for a period of six weeks—produces no improvement an operation for establishing peritoneal drainage may be undertaken with every prospect of success. In advanced and markedly toxaemic cases no brilliant results can follow any operation.

The objects of treatment are: (1) to diminish the outpouring of peritoneal fluid; and (2) to provide ample drainage of the fluid back to the body tissues. Attainment of the first of these aims can hardly

be hoped for in the absence of definite aetiological knowledge, but a mixed vaccine prepared from the intestinal flora of five patients has been used with brilliant results in one case.

After reference to various methods of surgical relief in ascites Captain Nigam describes an operation of his own by means of which a large drainage tube fashioned from the patient's own tissues is inserted into the peritoneal cavity and anchored there. A strip of fascia lata, at least 12 ins. by 3 ins. is dissected up from the outer aspect of one thigh, remaining pedicled at its upper end, is converted into a tube by lateral suturing over a temporary mould formed by a rubber drain one inch in diameter, and is provided with drainage apertures at the sides. The incision in the thigh is closed, the abdomen opened by an infra-umbilical para-median incision, and the fascial tube (which has in the meantime been lying enveloped in moist gauze) is picked up and pulled into the wound through a tunnel formed in the subcutaneous tissue of the abdominal wall commencing at the upper part of the thigh incision at the anterior superior iliac spine. The inner end of the tube is then slit in tri-radiate fashion, the lips thus formed anchored widely apart by chromic gut sutures, and its wall fixed by interrupted stitches to the posterior aspect of the anterior abdominal parietes, thus obviating any risk of subsequent intestinal strangulation. The peritoneal cavity is drained for five to six days by a fine rubber tube fixed in the lower part of the wound. Healing takes place in about ten days. The procedure may be repeated on the other thigh a mouth later if necessary.

Seven out of eight cases treated by this method were discharged relieved of their symptoms. One died of exhaustion.

J. J. Pratt.

BERTWISTLE (A. P.) & GREGG (A. L.). **Elephantiasis.**—*Brit. Jl. Surgery*. 1928. Vol. 16. No. 62. pp. 267–282. With figs. 236–246. [34 refs.]

A scholarly and interesting paper which must be studied in the original to be appreciated at its full value. The authors open with a brief reference to the history of elephantiasis, passing on to the various definitions of the disease put forth at times by different authorities, and propounding their own to the effect that the condition is one of hypertrophy and hyperplasia of the skin and subcutaneous tissue, formed in a part suffering from lymphatic and probably venous obstruction, as a result of bacterial infection, usually streptococcal. They note the necessity of distinguishing elephantiasis from lymphatic oedema in which there is no hypertrophy, but merely a distension of the cells and spaces. Next considering the question of bacteriology they conclude that cocci are probably borne from time to time to settle in the "locus resistentiae minor" caused by haemic or lymphatic circulatory disturbance, the focus of origin being a local wound or ulcer or some such distant site as the teeth. The recurrence of the condition in the same spot is explained by analogy with erysipelas which renders both individual and site liable to further attacks. UNNA's description of the histological changes is given verbatim, and the points noted in which it differs from that of ALBERCA. As regards pathology the dictum of HUTCHINSON is accepted, that there can be no elephantiasis unless venous and lymphatic obstruction are associated with streptococcal infection, and that the essential pathology is the same whether

the disease occurs in tropical or in temperate climates. The cause of the venous obstruction is usually a thrombosis. The causes of lymphatic obstruction on the other hand are many and are classified as congenital, traumatic and infective (under this head are included the *Filaria Bancrofti*, the tubercle bacillus, syphilis, leprosy, granuloma venereum or inguinale, infective lymphangitis of whatever source, and malignant disease).

After premising that another factor besides lymphatic and venous obstruction is necessary for the production of elephantiasis, the authors quote STARLING's description of the functions of lymph in furnishing an abundant supply of protein food to inflamed tissues, and suggest that in this disease the protein instead of merely helping in the process of repair, serves by continuous or perverted action consequent on repeated inflammatory attacks to stimulate the connective tissues to excessive growth. In the filarial form they presuppose that, after the death of the worm, its body becomes a nidus for the development of such cocci as may be carried to it by the blood from any septic focus in the body. " The precarious life of the parasites and the prevalence of septic foci make elephantiasis in filarial countries a disease of great frequency ; whereas the rarity of the combination of venous obstruction, lymphatic stasis, and streptococcal infection accounts for the small incidence of the disease in non-filarial countries."

Clinical features are briefly but sufficiently described. Treatment includes the removal of septic foci, improvement of general health and powers of resistance, vaccine and serum therapy, elevation, support by suitable bandages or stockings, massage, and operation. For the limbs Kondoleon's operation holds out the best prospect of a cure. The authors do not favour the use of the tourniquet in removal of the elephantoid scrotum.

Reports of six cases follow, three of septic origin, one consequent on venereal disease and surgical trauma, one filarial, and one due to malignant disease of the prostate ; cases No. 4 (septic) and No. 6 (malignant) are of absorbing interest. The latter has already been reported by Dr. G. C. Low [*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923, xvii, p. 77, and this *Bulletin*, Vol. 20, p. 902.]

J. J. Pratt.

CLOITRE (J.). Considérations sur l'elephantiasis des organes génitaux externes et des membres dans la région du Sud et du Sud-Est de Madagascar. [**Elephantiasis of Genitals and Limbs in Madagascar.**] —*Bull. Soc. Path. Exot.* 1928. Oct. 10. Vol. 21. No. 8. pp. 722–726. [Fianarantsoa Hosp., Madagascar.]

Elephantiasis is a fairly common affection in the south and south-east of Madagascar occurring chiefly amongst dwellers in or near forest regions. In the course of twelve years 197 cases have come under observation at the Fianarantsoa Hospital. In 152 of these (89 males and 63 females) the external genitals only were affected, in 3 (2 men and 1 woman) the upper limbs only, in 9 (7 males and 2 females) the lower limbs only, and in 33 (30 men and 3 women) both genitals and lower limbs. The general health of the sufferers, in some of whom the growths had attained to very considerable size, was almost always good. In no single instance were microfilariae discovered in the blood, and the author is evidently more than doubtful with regard to the filarial origin of the disease.

Treatment by autohaemotherapy, after the method of DESCARPENTRIES for erysipelas, was carried out in seven cases of elephantiasis of the limbs (3 upper and 4 lower) with appreciable resultant benefit in the patients in whom the arms were affected. In the lower extremity cases, which were of longer standing, no appreciable change was noted.

Surgical treatment was adopted in elephantiasis of the genitals. The author advances no new methods, and prefers operations which can be performed rapidly and without prolonged anaesthesia. In 176 cases of both sexes only one death occurred. In large elephantoid tumours of the scrotum the writer thinks that it may often be difficult to determine with certainty the presence or absence of inguinal hernia, and that it is consequently for many reasons wise for the operator to satisfy himself with regard to this by surgical exploration of the inguinal canals. If a hernia be found it should be dealt with forthwith and removal of the scrotum deferred to a later date. Two cases in point are quoted and interesting details of one of these given. [The site of elephantiasis varies greatly in different countries but it is curious to note the extraordinarily high proportion of female genital cases recorded in this paper—66 in a total of 197, or 33·5 per cent.]

J. J. Pratt.

SANNER. Une technique pour la cure chirurgicale de l'éléphantiasis du scrotum. [**Surgical Treatment of Elephantiasis of the Scrotum.**] —*Ann. de Méd. et de Pharm. Colon.* 1928. July–Aug.–Sept. Vol. 26. No. 3. pp. 295–299. With 2 text figs.

In this paper the author, with the aid of diagrams, advances a method of providing the penis with a covering of normal healthy skin in the operation for removal of the elephantoid scrotum in cases in which the penis has disappeared from view, buried in a mass of diseased tissue. He urges that in such cases the penile integument remains healthy and unchanged, having been merely doubled forward upon itself and stretched so as to form the lining of the tunnel leading to the glans, and that consequently nothing is simpler than to devaginate the organ and restore such covering to its normal position. Accordingly, as the first step of his operation, before liberating the testes and cords and fashioning the flaps available for forming a new scrotum, he makes an incision extending from the pubes to the orifice of the tunnel, surrounding its opening, and continuing in the median line to the lower border of the tumour. The underlying portion of the cutaneous tunnel is first dissected clear of the hypertrophied tissues beneath, and the penis eventually disengaged with its inverted and pendant covering. The latter is folded back and at the end of the operation, which proceeds much on ordinary lines, is united by stitches at the top of the median incision to the lateral flaps formed for covering the testes. The author has carried out this procedure in 38 cases, but of these no details are given. The patients leave hospital at the end of three weeks. [It is doubtful whether in practice this so-called new technique will carry the surgeon further than the advice, already given in text-books, to the effect that in cases of this kind as much of the preputial lining of the tunnel as is healthy should be preserved to assist in forming covering for the penis. That this lining consists of stretched penile integument in addition to the mucous membrane of the prepuce is obvious.]

J. J. Pratt.

WILSON (C. J.). **Tuberculosis in Natives of Kenya.**—*Kenya & East African Med. Jl.* 1928. Jan. Vol. 4. No. 10. pp. 296–316. [Summary appears also in *Bulletin of Hygiene.*]*

"In opening a discussion on Tuberculosis in Natives of Kenya, one has to admit at the outset a most unfortunate lack of knowledge of facts." This frank statement by Dr. Wilson applies to most of our African dependencies and protectorates, but the fact that the problem is, at last, arousing the interest of the local medical men is an earnest of more accurate observations to come. Though the article under review hardly claims to give accurate information, certain facts appear to emerge, though the statistical basis for them is admittedly unsatisfactory. The author quotes the views of three experienced medical men to the effect that tuberculosis is increasing. The Medical Officer of Health of Nairobi (1925) reported that "the increasing prevalence of tuberculosis can only be described as a matter of grave alarm and one that merits serious consideration." The Medical Officer of Health of Mombasa (1923) said "the fact remains beyond question that the disease is widespread and appears to be increasing"; while Dr. R. A. W. PROCTER wrote from Fort Hall that "there is no doubt whatever that the disease is increasing rapidly."

[Dr. Wilson rightly desires to establish the truth about this question rather than to accept individual opinions; but, while the statistics which he presents support the views expressed by the medical men above quoted, they appear to the reviewer to be of much less value than the deliberate opinions formed by Medical Officers with local experience in the course of their duties. The fallacies incident to medical statistics, even in England, are well known and depend on the difficulty of obtaining reliable diagnosis and satisfactory notification; but when, as in the present case, the figures are compiled from admissions and deaths in Government Hospitals, their applicability to the problem of tuberculosis amongst the natives of Kenya is very questionable indeed. It is of interest to note, however, that the average number of tuberculosis deaths in hospitals during 1913, 1914 and 1915 was 22·3 and during 1924, 1925 and 1926, amounted to 78·6. This seems to show that the natives are gradually learning to make a greater use of the hospitals. Further, during the 1913–15 period, the ratio of tuberculosis deaths to total in-patients (all diseases) was 0·255 per cent., this ratio rising in the 1924–1926 period to 0·328 per cent.; so that the figures, as far as they are applicable to a population of about 2½ million natives, suggest that the disease is increasing.]

Of much greater interest is the report of Dr. PHILP of the Tumu Tumu Mission Station, who writes :—

"In 1909 the Church of Scotland Mission established Tumu Tumu Station with a boarding school for boys. From 1909–1920 there was an average of 60 boys in the dormitory among whom no cases of ordinary phthisis or generalized tuberculosis occurred, nor were such cases seen in ordinary hospital patients."

"During the examination of hundreds of natives for the Carrier Corps in 1916–1917 at Fort Hall and elsewhere, no cases were rejected for tuberculosis. In 1918 the famine occurred, followed by the influenza epidemic.

*This is one of a series of summaries on tuberculosis in the tropics which it was proposed to publish in both the *Bulletin of Hygiene* and the *Tropical Diseases Bulletin*; exigencies of space have compelled us to restrict the second publication to the summary of WILSON's paper: the others and many more of great interest will be found in the *Bulletin of Hygiene* for July, 1929.—Ed.

From 1920 onwards the picture completely changed. The old type of acute tubercular pneumonia disappeared, and its place was taken by ordinary phthisis and generalized tuberculosis."

Of particular interest is a remark by Dr. PHILP that in the old days (1909–1920) "there were seen in hospital occasional cases of acute broncho-pneumonia with tubercle bacilli in the sputum. Such cases ran an acute course, recovered, and were not left with any sequelae." [If the organism seen in the sputum in these cases was really the tubercle bacillus and not some other acid-fast organism this record is of great importance and not at all in line with the accepted view; but there is much evidence that Africans, when they contract tuberculosis under the natural conditions of tribal life and without the added strain of military service or industrial work, may exhibit the benign clinical type often seen in children of school age in Europe, a type seldom associated with a positive sputum.]

Dr. GILLAN, now in charge of Tumu Tumu Hospital, gives a very different picture of the medical examination of candidates for admission to dormitory than that given by Dr. PHILP for 1909–1920.

"Three months ago," he writes, "I examined candidates for admission to dormitory and rejected the following numbers on account of physical signs which I thought indicated the presence of tubercle: of 24 males, were rejected 4; of the remaining 20, one developed signs and symptoms later: of 10 females, were rejected 2; of the remaining 8, one developed the disease in the knee-joint."

Dr. Wilson considers that there are no adequate grounds for the supposition that pulmonary tuberculosis in the African usually runs an acute course to a fatal termination. On the contrary, he thinks the evidence points to a chronic form of the disease. As evidence for this unconventional view he quotes seven post-mortems on natives in hospitals at Nairobi. [To judge by the descriptions of the organs of these cases, however, as seen at autopsy, the tuberculosis cannot have been "chronic" in the usual sense of the term.] As further evidence for the relatively chronic character of the disease in Africans, he quotes 13 cases from the Native Civil Hospital, 6 of whom were discharged, 4 of these being free from signs or symptoms of active disease. Seven, however, died after an illness averaging 6 weeks, 2 of these being "almost certainly chronic cases in the terminal stage." [While nobody can doubt that Africans sometimes suffer from chronic tuberculosis, the evidence adduced by Dr. Wilson to show that it is *usually* chronic does not appear conclusive.] Dr. Wilson makes an appeal for a further study of tuberculosis in Kenya and rightly points out that, without more accurate knowledge, it is impossible to formulate a successful campaign against the disease.

S. L. Cummins.

SITSEN (A. E.). Het anatomische beeld der tuberculose op Java. [**The Anatomic Aspect of Tuberculosis in Java.**]—*Nederl. Tijdschr. v. Geneesk.* 1927. Aug. 13. 71st Year. 2nd Half. No. 7. pp. 726–737. [4 refs.]

Out of a series of 3,155 post-mortem examinations in Malays who died of natural causes at Sourabaya (Java), in 726 cases the cause of death was tuberculosis. The sexes were equally affected; no particular class of age was especially prevalent in the series.

The tuberculous affection of the various organs is separately dealt

with and the author arrives at the following conclusions concerning the aspect of tuberculosis in the Malay race :

(1) The regular course of the disease is a chronic one, though of a much shorter duration than in Europe.

(2) The lymph glands are generally affected, in most cases, however, in connexion with the pulmonary process.

(3) Intestinal tuberculosis is a common complication of the last stages, but is rarely primary.

(4) Laryngeal tuberculosis occurs in the same way, never as a primary affection.

(5) Tuberculosis of the spleen (miliary, but sometimes larger tubercles) likewise constitutes a complication of the ultimate stages of the disease.

(6) The liver shows the same symptoms ; more extensive affection is rare.

(7) The urogenital system is rarely affected except for miliary tubercles in the kidneys in the last stages.

(8) Cerebral tuberculosis is rare.

(9) The heart muscle may be the site of the infection in rare cases.

(10) The endocrine organs are also subject to the affection in rare cases.

(11) Predominant affection of the serous membranes is relatively rare.

(12) Bones and joints are fairly often affected ; in such cases repeatedly the lungs were found to show little or no signs of tuberculosis.

(13) The skin may become affected.

(14) Acute generalized miliary tuberculosis is rare.

(15) Sometimes pulmonary tuberculosis is less marked and the predominant alterations are found in serous membranes and lymph glands. In other cases only acute pulmonary alterations were found (pneumonic type). The author ascribes the peculiar course to unfavourable external influences.

W. J. Bais.

CIOTOLA (Alberto). Diffusione della tubercolosi in Eritrea. [**Tuberculosis in Eritrea.**]—*Arch. Ital. Sci. Med. Colon.* 1929. Feb. 1. Vol. 10. No. 2. pp. 79–85. [5 refs.] English summary p. 85. [" Regina Elena " Colonial Hosp., Asmara, Eritrea.]

Natives of Eritrea who were transferred to North Africa for military service were found on return to be infected in considerable numbers with tuberculosis, which is rare in Eritrea. Seeing that the climate of that country is unfavourable to its spread, the author does not anticipate any extension of the disease.

A. G. B.

SUK (V.). **On the Occurrence of Syphilis and Tuberculosis amongst Eskimos and Mixed Breeds of the North Coast of Labrador. (A Contribution to the Question of the Extermination of Aboriginal Races).**—*Publications de la Faculté des Sciences de l' Université Masaryk.* Brno, Czechoslovakia. 1927. No. 84. 18 pp. With 6 text figs. (1 map). [Summary appears also in *Bulletin of Hygiene.*]

This paper, a very important one, bears the sinister sub-title of " a contribution to the question of the extermination of aboriginal races," the significance of which will not be lost on those who have studied the effects of European contact with races at the more primitive stages of culture. After a preliminary discussion on the introduction of syphilis, a disease unknown amongst the Eskimoes prior to their association with persons of European stock, Professor Suk passes on to

the "occurrence of tuberculosis," a disease, like syphilis, unknown to Eskimoes, "a stock without any history of tuberculosis and in consequence no immunity at all."

We cannot do better, in this summary, than to start by quoting the opening paragraph of Dr. Suk's paper :—

"About thirty years ago Lieutenant Peary brought six Smith's Sound Eskimos to New York ; within one or two years four of them were dead, they succumbed to acute tuberculosis. One of those Eskimos was Kishu, a chief of his tribe, about 45 years of age, he measured 1·64 m. in height, weighed about 170 lbs., was muscular, and in every respect normally developed. He died at Bellevue Hospital, New York, of acute general tuberculosis within less than five months after the inception of his disease."

Dr. Suk, a professor of anthropology and therefore in a position to speak with authority on a geographico-ethnological problem, has some interesting remarks to make on this question of racial susceptibility to tuberculosis after a summer and autumn spent in dealing with the diseases of the Eskimoes at Mokkovik, Hopedale, Nain, Okkak, and finally the more northerly and primitive station of Hebron on the coast of Labrador. He quotes HUTTON, a medical missionary who had worked on the Labrador coast up to 1912, to the effect that tuberculosis there is "a very fatal disease . . . The prognosis seems hopeless, so strong is the grip of the disease—or rather, so weak is the resisting power of the Eskimo constitution." Dr. Suk's commentary is as follows : "To our mind the resisting power of the Eskimo constitution is not weak absolutely, only in relation to the new diseases acquired in recent years ; they had simply no chance to develop any kind of resistance. The careful study of the history and geography of disease shows that this is always the case with new diseases among people up to the present not touched by them."

It would seem that tuberculosis is still much more widespread amongst the "Settlers" and half-castes than amongst the pure Eskimoes. This is well brought out in the records of Von Pirquet tuberculin tests on the children of different communities along the coast :—

	Number of cases.	Reactions.		Percentage of positive reactions.
		Negative.	Positive.	
Pure Eskimo children ...	51	46	5	9·8
Half castes and other mixed breeds of different shades	32	14	18	56·2

It is of great interest to read that those pure Eskimoes who, in spite of the presence of the white man, still maintain their old established dietary (of seal meat and blubber) are particularly free from tuberculosis. [Here we are reminded of the sudden and rapid spread of tuberculosis amongst the Red Indians of Canada on the extermination of the buffalo, their natural food ; and we would add that it was not only the want of fresh meat, but the sudden dependence for food upon the white man's supplies, and the consequent change from the life of a free hunter to the monotony and idleness of a "location" existence, that proved so fatal to the Indian tribesman.] It looks as if the same fate were impending for the Eskimo. "How long," asks Dr. Suk, "will the natural supply of seal meat and blubber last. . .

The people on the whole North Coast need only a few thousands of seals, but further south there is a slaughtering going on, year after year, hundreds and hundreds of thousands of seals, adult and babies—a slaughtering which reminds one of the extermination of the bison on the prairies." Dr. Suk expresses surprise that this slaughter of the innocents should be permitted while, as he says, "there are some Societies which would almost fight for every life of a rat or mouse which has to be sacrificed in the bacteriological laboratories." The author turns, at this point, to consider under five headings, the different reasons which explain the extermination of aboriginal peoples when brought into contact with civilized man :—

"The outlook," he concludes, "is grave . . . There are already National Parks in many countries, various natural zoological gardens for rare animals ; perhaps one day we shall have some Anthropological Gardens for interesting primitive races."

S. L. Cummins.

VAN BERKHOUT (P. J. Teding). Contribution à l'étude du metabolisme basal chez les habitants des tropiques. [**Study of the Basal Metabolism of the Inhabitants of the Tropics.**]—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1929. Vol. 18. No. 1. pp. 1–69. With 6 figs. & 5 plates. [Refs. in footnotes.] [Med. Lab., Weltevreden.]

This work is prefaced by a discussion of the results of other workers and a description of the different methods which have been used to determine the basal metabolism. The experiments were made in Java using as subjects only males consisting of 18 Europeans, 3 Indo-Europeans and 16 natives. The Europeans varied in age between 27 and 66 years and in period of residence in the tropics between 4 weeks and 30 years. The basal metabolism was determined by a combination of Krogh's and the Douglas-Haldane methods, using both the du Bois and the Benedict formula for calculating the surface area. The figures so obtained were compared by statistical methods with the normal figures for subjects of the same height and weight living in temperate climes. Six determinations at least were made on each subject on different days. The results in the case of the Europeans resident in the tropics are claimed to be in complete accord with other investigations made within the last eight or nine years in other tropical countries and indicate a lowering of the basal metabolism in torrid regions. In the case of the natives examined they also were found to have a lower basal metabolism than the standard value for individuals of their height and weight living in temperate districts.

M. E. Delafield.

VAN BERKHOUT (P. J. Teding). Etude sur la thermogenese des habitants des tropiques pendant la marche sur une surface horizontale. [**A Study of the Heat Production of Inhabitants of the Tropics whilst walking on a Level Surface.**]—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1929. Vol. 18. No. 1. pp. 71–80. With 2 plates. [16 refs.] [Med. Lab., Weltevreden.]

Using similar experimental methods as in the previous work the author determined the heat output, in gram-calories per kilogram-metre, of European and Malay subjects whilst walking on the level. The

output is doubled if the subject walks at a rate of 90 instead of 60 metres per minute. The total heat production in the case of the Malays was considerably greater than with the Europeans.

M. E. Delafield.

EYKMAN (C.). Le metabolisme basal des habitants des pays tropicaux. (A propos de l'article de M. Jhr. Dr. P. J. Teding VAN BERKHOUT dans le fascicule 1, T.XVII, 1928). [**The Basal Metabolism of the Inhabitants of the Tropics. (With Reference to the Article of M. Jhr. Dr. P. J. Teding van Berkhout in No. 1 of Vol. 17.)**]—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1929. Vol. 18. No. 1. pp. 81–84.

This is a spirited criticism of a previous paper of Dr. VAN BERKHOUT. Dr. Eykman replies to the adverse comments made on his own work, and maintains that his results show that there is no sensible difference between the basal metabolic rate in the tropics and in temperate climes. He adverts to the different results obtained by different workers and claims that the figures given are not significant. He points out that there are included among the subjects examined three who had only been in Java for a week, and suggests that had their basal metabolism been investigated whilst in Europe it would have been found to be below standard. More extended observations are asked for, to be made on a sufficiently large group of subjects shortly after arrival in the tropics and again after six months' residence.

M. E. Delafield.

MONTEL (M. L. R.). La prophylaxie du tétanos ombilical à Saïgon (Cochinchine). [**Prevention of Umbilical Tetanus at Saigon.**]—*Bull. Soc. Path. Exot.* 1929. Jan. 9. Vol. 22. No. 1. pp. 6–7.

Twenty-five years ago umbilical tetanus at Saigon was a scourge. After the birth the cord was severed, or crushed, with a fragment of porcelain picked up off the ground, and in the first ten days 20 per cent. of the babies succumbed to tetanus. In 1905 measures of prevention were taken by Dr. DEJEAN DE LA BATIE. The midwives were called together and on a model was shown the technique of ligature, division and dressing of the cord ; curved scissors were distributed, and sterilized umbilical dressings containing a ligature, compress of medicated lint, cotton wool and a gauze bandage, with a second dressing to be applied after the fall of the cord. Every matron who brought a living baby with a healthy umbilical scar at the 20th day received a prize, in value one-third of the fee asked for the confinement. Births were reported and visits paid by a doctor twice a week, on which occasions an infirmier performed vaccination. Gradually the old midwives were replaced by nurses trained at the Maternity Hospital, Cholon. All the changes took place without friction. The tetanus mortality dropped from 20 to 3·3 per cent. ; and is now between 0·75 and 0·95 per cent. The infantile mortality of the first month was in 1905 23·5 per cent. ; in 1907 it was 6 per cent., at about which figure it has remained. By these simple means tetanus of the new-born has been banished from Saigon.

A. G. B.

REVIEWS AND NOTICES.

BALFOUR (Margaret I.) [C.B.E., M.B., C.M., Late Chief Medical Officer, Women's Medical Service, India] & YOUNG (Ruth) [M.B.E., B.Sc., M.B., Ch.B.]. **The Work of Medical Women in India.** With a Foreword by Dame Mary SCHARLIEB, D.B.E., J.P., M.D., M.S.—pp. xiv+201. With 1 folding map & 5 plates. 1929. London : New York : Toronto : Melbourne : Bombay : Calcutta : Madras : Humphrey Milford, Oxford University Press. [9s.]

"Perhaps there is no country in the world where men and women live under such different conditions as in India. The man has education—medical aid—the power to earn his living—the right to move about freely and voice his grievances. And what is it that bars women from doing the same ? Not the decree of the foreign Government—but the inexorable tyranny of domestic custom and habit" (p. 64).

This short extract gives a key to the book and to the great need for medical women in India. Only among Parsees, Christians and aborigines can a woman receive proper treatment from a man doctor. When Caste and the purdah seclude the Hindu and Mahomedan woman he can at most feel a pulse and see a tongue through a slit in a curtain. The authors describe The field of work ; Purdah System, decreasing among the wealthy as education increases ; Caste, Early Marriage, Hindu Widows, Childless wives and the lack of education among the women of India. Chapters ii and vi are filled with a well written story of the early pioneers and those that followed them ; including accounts of the origin of the Lady Dufferin Fund, etc., and the formation and official recognition of the "Women's Medical Service." At first there were only makeshift hospitals and no trained assistants. More than fifty years have passed since the first medical woman went out to help her Indian sisters. Miss Clara SWAIN, M.D. (Penn.), U.S.A., arrived in Barielly in January, 1870 ; she was attached to the "Women's Foreign Mission of the Methodist Episcopal Church." Many of the pioneers and many of those now working in India belong to missions and the work of women medical missionaries receives full credit in Chapter v of this volume. Of the pioneers who followed Dr. Swain some of the best known are Dame Mary SCHARLIEB, Dr. PECHEY and Dr. BIELBY, who was well known to the reviewer and was greatly respected. The frontispiece gives portraits of two Indian ladies : Miss D. JAGANADHAN, qualified 1890, died 1894, and Miss RUKHMABAI, L.R.C.P. & S.E., 1895. In the chapter on the medical education of women in India we find that Madras was the pioneer. Of four students who entered the certificate class at the Madras Medical College, in 1875, one was Mrs. Scharlieb. She then went to England and qualified in London. Returning to Madras she was appointed lecturer on midwifery and superintendent of the recently opened Caste and Gosha Hospital for women. There are chapters on preventive medicine, miscellaneous activities and Appendices containing statistics of : Maternal mortality in childbirth in India ; Infant mortality ; Early motherhood. The illustrations include portraits of Dame Mary Scharlieb and other pioneers and a beautiful photograph of the Lady Reading Hospital, Simla. The authors have done their work well and the book will be of interest to many readers outside the medical profession.

J. H. Tull Walsh.

CHESTERMAN (Clement C.) [O.B.E., M.D. (Lond.), M.R.C.P., D.T.M. & H. (Camb.)]. **African Dispensary Handbook. An Aid to the Training and Practice of African Medical Assistants and for the Guidance of all engaged in Medical Practice in the Dispensaries of Africa.**—pp. xii+276. With 19 plates (3 coloured). London: The Christian Literature Society for India & Africa & the Sheldon Press, Northumberland Avenue, W.C. 2. [4s. 6d.]

Those who have any experience of teaching the partially educated African native the elements of medical science and practice can appreciate the difficulties of the task. Quite apart from the limited intelligence or previous education of the African student is the dearth of literature dealing with science in the vernacular. There are two alternatives before the author or the teacher. He may attempt to produce a very simple manual in the vernacular of the tribe amongst which he is working, or he may write in English. Both methods have been attempted, and both have their advantages and disadvantages. If the book be written in the vernacular, it will obviously be more intelligible to the unaided student; but its usefulness will be limited to one small tribe, and the translator will find the work extremely difficult. He will have to coin words unknown to the language and to present ideas and conceptions more foreign still. On every page he will have to make digressions into cognate sciences to explain the inevitable references to biology, chemistry, anatomy, physiology, and pharmacology.

If the book be written in English, it will be practically unintelligible to the unaided student. Such a table, for instance, as that given on page 5 of Dr. Chesterman's book for the differential diagnoses between heat-exhaustion and heat-stroke—what African native, however familiar with English, could grasp its meaning, without laborious and careful explanation line by line? But this is no argument against the value of such a book in the hands of a competent teacher, familiar with the native language and ideas and resourceful in illustration. The presentation of the subject in English has the immense advantage that it is equally serviceable all over Africa; it paves the way to the understanding of other works of reference in English, it is unfettered in terminology, and, last but not least, it can be presented, as has been most successfully accomplished by Dr. Chesterman, in concise and almost tabular form, with delightful freedom from digression, and an attractive assumption that the teacher at any rate knows exactly what is meant. In other words, it transfers from author to teacher the onus of explanation, and riveting in the ideas presented. And wisely so, for it is only by a method of searching cross-examination that the teacher can really know if the lesson has been understood.

And now to the book itself. It consists of four sections: (1) Medical. (2) Surgical. (3) Dispensing Notes and Pharmacopoeia (English and French). (4) Laboratory Notes and lists of necessary drugs and equipment for an African dispensary. The diseases referred to in the first two sections are such as are common in Africa. The plates and illustrations are abundant and good. The information is reliable and up-to-date. Diseases at present unknown in Africa (e.g., scarlet fever, sprue, etc.) are wisely omitted, and even cancer—undoubtedly rare in tropical Africa—finds but brief mention. In this we think the author has shown wise discrimination and perspective. There are a few very helpful paragraphs on the external diseases of the eye, and a passing reference to iritis, glaucoma, and cataract. The practical chapter on minor surgery is excellent. In future editions we suggest the advisability of the author including chapters on elementary biology, simple hygiene, and welfare work—so all-important in dispensary instructions.

The Pharmacopoeia section is simple and clear, and the metric system used makes it undoubtedly easier for the dispenser; for parts of Africa where the English system is used it would be advantageous to have this

chapter adapted to the English measure. A compromise is made on pp. 271–2 by a series of conversion-tables.

The laboratory notes are thorough and leave little to be desired.

The book is interleaved between the sections ; perhaps it would be better in future editions to interleave it throughout so that teacher and taught can make special notes in their appropriate place. A few inevitable misprints require correction in the next edition.

The gifted author of this little manual is to be congratulated on having produced a work that will be of use all over Africa, and specially tropical Africa, and on having brought at least one step forward the medical education of the African student.

J. Howard Cook.

KUCZYNSKI (Max H.) [Dr. Phil. et Med. Professor an der Universität Berlin, Abteilungsvorsteher am pathologischen Institut]. **Der Erreger des Gelbfiebers. Wesen und Wirkung.** Gemeinsame Untersuchungen mit Bianca HOHENADEL. [The Agent of Yellow Fever. Its Nature and Action.]—191 pp. With 158 text figs. 1929. Berlin : Verlag von Julius Springer. [Rm. 24.]

This work is essentially an expansion of the authors' experiments and observations, reviewed in this *Bulletin*, Vol. 26, p. 296, in which evidence is brought forward in support of the view that an organism named *Bacillus hepatodystrophicans* is the causative agent of yellow fever.

Apart from the large number of experiments on this question, the authors also record many original observations on yellow fever, based on their studies of both African and South American strains of the virus, but in the short space available it is impossible to do more than briefly indicate the scope of the work.

After a short general introduction the question of the virus in the monkey is discussed, based on experiments with four different strains. The results indicate that the virus lives in the blood and the inoculation of infected blood produced a more rapid infection than the inoculation of infected liver. The virus was shown to be present in the circulation of monkeys inoculated with infected blood as soon as 8 minutes after the inoculation and in other cases from 4 to 18 hours later. When liver was used a longer interval elapsed before the virus could be demonstrated in the blood.

Many of the infections were extremely rapid, with a duration of only 3 to 4 days, and also were almost invariably fatal, except in very young animals, which were more resistant.

Details are then given of the culture media [see this *Bulletin*, Vol. 26, p. 296] and the results of a large number of culture experiments. The best method of obtaining primary cultures in tubes of the special ascitic agar medium, was by the introduction of pieces of heart muscle of an infected monkey, killed a few hours after the first rise in temperature. After an incubation of 6 to 8 days, but sometimes longer, up to 20 days, at 36° C., successful cultures show an obvious growth of organisms which generally appear first between the implanted tissue and the wall of the tube. Subcultures are made every 2 or 3 weeks by the transference of about 0·5 cc. of the culture into fresh tubes with or without pieces of sterile rabbit kidney.

The bacillus once obtained seems to be fairly resistant, for cultures kept at room temperatures may persist up to two months ; moreover, it will withstand the effect of 0·5 per cent. phenol for as long as 2 weeks.

The results of infection experiments with cultures of this organism are next described and the authors carefully discuss the possibility of the presence of an invisible virus, living concurrently with the bacillus. Their experiments support the view that the unchanged virus cannot persist under cultural conditions for more than 5 days. They have succeeded,

however, in obtaining typical yellow fever infections in monkeys by the inoculation of culture material after 13 subcultures and after intervals up to six months after isolation of the original culture. Unless these cultures contained *Bacillus hepatodystrophicans* their inoculation into monkeys invariably gave negative results, which is evidence against the possibility of the persistence of an invisible virus.

The inoculation of cultures into monkeys, although sometimes followed by a typically fatal infection, more often produces a chronic type with a long incubation period and sometimes with one or more relapses, which may end in death. By *passage* through two or three monkeys, however, it is possible to obtain the full virulence.

The authors describe the results of protection experiments in human beings. In most instances 0·1 to 0·5 cc. of a well-grown culture was mixed with immune serum and inoculated into the patient, a second inoculation being given 10 days later. Five of these subjects subsequently acquired laboratory infections, proved by subinoculation into monkeys, but in every instance the attack was very mild, consisting only of one or two days' fever, but with characteristic changes in the blood.

An interesting chapter is devoted to the early diagnosis of yellow fever by means of blood examination. Characteristic alterations in the leucocytes were found on the first day of fever, the most important being an influx of immature neutrophiles, which on the second day often contain fat globules. The number of lymphocytes falls and in severe cases becomes very low; subsequently the number may rise, this being a very favourable prognostic sign. Resistant cases also show typical monocytosis up to 35 per cent. There is a very marked fall in the sugar content of the blood which is of great importance from a diagnostic and pathogenic point of view.

The authors found a very much higher virus content in the blood than any previously recorded, and by dilution experiments showed that there may be at least 1,000,000 minimal lethal doses in each cc. Various abnormal forms of the disease both in man and monkeys are then described, which confirm the view that in nature many cases escape recognition.

A special chapter is devoted to the question whether the cultures merely contain persistent virus or represent a true development. The most striking argument is the fact that primary cultures may give negative results when inoculated into susceptible monkeys, whilst later subcultures give positive results. In addition, infections were never obtained by the inoculation of cultures unless the bacillus was present.

Experiments with mosquitoes are then described and it was found possible to infect these insects by feeding them on cultures of the bacillus. It was necessary to feed them repeatedly with small doses of the cultures, as a large meal was fatal. Mosquitoes infected in this manner produced typical yellow fever when fed on monkeys. Infected mosquitoes were found to contain living virus 3 days after death, when kept at 31° C.

The microscopical examination of infected mosquitoes showed the presence of very fine coccoid and bacillary forms on the surface of the epithelium in the midgut, which resemble the cultural forms. Males as well as females were infected by feeding on infected material.

Finally a chapter is devoted to the nature of yellow fever which is described as a *Hepatodystrophia glykopriva acuta infectiosa*, the most important symptom being the fall in the blood sugar content, following the destruction of the liver cells which control the formation of glycogen. Consequently treatment should be based on this symptom and every effort made to replace the loss of sugar.

In an appendix the authors describe experiments made in Rio de Janeiro confirming their views as to the nature of the cultures, and also indicating the susceptibility of three species of Brazilian monkeys, the marmoset, squirrel monkey and *Cebus*.

The scope of this work will be evident from this brief outline of the contents and the original should be read by those interested in the subject of yellow fever. Numerous figures, for the most part well reproduced,

help to give a clear idea of the authors' observations. Unfortunately the price of this publication, 24 shillings for a paper-backed brochure of 191 pages, is a glaring example of the absurd prices charged by German publishers since the war.

E. Hindle.

HOGARTH (A. Moore) [F.E.S.]. **The Rat: a World Menace.** With Preface by Sir Thomas HORDER, Bart., K.C.V.O., M.D., F.R.C.P. —pp. vi+112. With 2 plates & 5 text figs. 1929. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, W. 1. [7s. 6d.] [Review appears also in *Bulletin of Hygiene.*]

This book is dedicated to the Medical Officers of Health of Great Britain, who are credited with having saved the unsatisfactory Rats and Mice Destruction Act from being utterly abortive.

Beginning with an account of the campaign which led up to the passing of the Rats and Mice Destruction Act, the author goes on to describe the habits and the amazing fecundity of rats. It is estimated that the rats in Great Britain are at least equal in number to the human population and the mice twice as numerous and that rats and mice cost the country not less than £100,000,000 per annum in food consumed and wasted. A chapter on the rat as a carrier of disease rather overstates the case. Though trypanosomes are commonly found in the blood of rats they are not the cause of human trypanosomiasis as is implied. There also appears to be some confusion between sleeping sickness and encephalitis lethargica. Mice are not directly charged with, but are stated to be under suspicion as factors in, the causation of cancer, leprosy, mange and foot-and-mouth disease.

The chapters on the natural enemies of the rat and the various methods of rat destruction are complete, instructive and interesting, particularly those on trapping and poisoning. Stress is laid on the importance of sudden attacks on a large scale and of varying the tactics employed. A wide choice of methods is described and even the amateur rat-catcher should be able to achieve considerable success if he is prepared to tackle the problem seriously on the lines laid down in this book. Virus receives a special chapter and the importance of selecting only those preparations which are effective against rats but harmless to man is made clear. Rat-proofing of buildings in both rural and urban districts is described. A short chapter is devoted to rats on board ship, but the recommendation that "every vessel should be fumigated as soon as empty" is impracticable.

The reason for the references in the last chapter to epidemics of influenza and dengue is not clear.

The book is undoubtedly well worthy of study by everybody who is interested in rat-destruction, either in principle or in practice and its value would be enhanced rather than diminished by the exclusion of such small sections as appear to be over-statements of the case against the rat.

Chas. F. White.